

# THE UNEASY CASE OF PROGRAMMED OBSOLESCENCE

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This article is an attempt to understand the context in which the concept of programmed obsolescence has emerged and evolved to slowly make its appearance in today's legal landscape. It concludes the first phase of our four-year research project. The text aims at describing the genealogy of the concept of programmed obsolescence, not its legal treatment. The ambition here is to revisit common places of obsolescence, from its acceptance in Bernard London's famous pamphlet to the popular tale of the reduced life of the light bulbs. This essay focuses on facts surrounding obsolescence narratives. It describes the grammar of obsolescence, its epistemology. It is only in the second phase of our project that we will look at the legal and technical grounds, both in terms of specific remedies and statutory initiatives, to redress some of the negative impacts attributed to the phenomenon. The findings of this subsequent phase of our project constitute the object of an article in preparation.

The history and early manifestation of programmed obsolescence tells a compelling story about consumption and the contradictions of capitalism. To keep the wheels of the economy turning and workers active, more goods must be purchased. Innovation and competitive consumption are thought to be conditions of progress. Jean-Jacques Rousseau, in his 1754 work *Discourse on Inequality*, predicted such:

Insatiable ambition, the thirst of raising their respective fortunes, not so much from real want as from the desire to surpass others, inspired all men with a vile propensity to injure one another, and with a secret jealousy, which is the more dangerous, as it puts on the mask of benevolence, to carry its point with greater security. In a word, there arose rivalry and competition on the one hand, and conflicting interests on the other, together with a secret desire on both of profiting at the expense of others. All these evils were the first effects of property, and the inseparable attendants of growing inequality.<sup>1</sup>

Upon walking through the early days of programmed obsolescence, we realized that law is perhaps ready to address programmed obsolescence for the reason that, in the Western world, to a large extent, both obsolescence and law are products of the market economy. Obsolescence might have been accepted as an unabridged matter of business, but not of law. Law, in our Western civilization overall embraces and supports the structure of the market. In this perspective, the law of programmed obsolescence seems to be a contradiction in terms, an oxymoron. If this assumption stands, it means that the recent legislative initiatives tackling programmed obsolescence signal an important shift and are explainable perhaps by social concerns strong enough to check the forces of the liberal economy. Such concerns involve the themes of overconsumption and environment.

Let's start with a generic definition of programmed obsolescence. Programmed obsolescence is generally understood as the engineered, premature breakdown of a product to trigger its replacement by its own maker. One can speak of an unvirtuous circle. This proposed definition is not scientific but captures the

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<sup>1</sup> Jean-Jacques Rousseau, *Discourse on the Origin of Inequality*, translated by GDH Cole (Penguin, 1984) at 29, online (pdf): [Egalitarianism <egalitarianism.no/pdf/Rousseau\\_Discourse\\_on\\_Inequality.pdf>](http://Egalitarianism.org/egalitarianism.no/pdf/Rousseau_Discourse_on_Inequality.pdf).

constitutive elements of programmed obsolescence. It points to the designer of the product, the engineer or the manufacturer. It conveys a certain idea of fault, some wrongdoing, in the nature of an engineered default which affects the durability of the product. The definition also takes into account the consumer's expectations with respect to the serviceability of the product. As it is, the definition reads almost as a commandment: replacement of the product, when provoked and not initiated by the consumer, ought to be addressed. And indeed, consumer law has traditionally offered protection to the purchaser when the product is of a lesser quality than expected. Durability is generally a ground of action recognized in most jurisdictions. Section 38 of the *Québec Consumer Protection Act*, for example, prescribes that “[g]oods forming the object of a contract must be durable in normal use for a reasonable length of time, having regard to their price, the terms of the contract and the conditions of their use.”<sup>2</sup>

However, programmed obsolescence seems to bring the question of durability to another level which goes beyond the jurisdictions of consumer law and its policy objective of informed choice and of commercial law. By being indissociable from obsolescence, the production of waste becomes a matter of environmental law and brings to the fore social concerns. Until obsolescence became associated with environmental concerns, the law did not develop the antibodies for a phenomenon it generally perceived as legal. In an effort to map the movements of ideas, we noticed that the topic of programmed obsolescence moved from the discreet sphere of private law, where it remained largely unnoticed, to the realm of public law. Signs of this shift appeared in other fields first. The topic of programmed obsolescence is covered in managerial economics and marketing.<sup>3</sup> It has also made some headway in engineering and design schools to address sustainability issues at the design and production stages of manufacturing.<sup>4</sup> This renewed interest is due, as already noted, to the social and environmental concerns raised by the volume of electronic waste as a result of the accelerated life cycle of products and limited recycling capacity. France's recent reform is on point. It pioneered the movement against programmed obsolescence in 2015 by enacting the *Loi relative à la transition énergétique pour la croissance verte*,<sup>5</sup> which criminalizes “techniques by which a manufacturer aims to deliberately reduce the life of a product to increase the replacement rate”.<sup>6</sup> Québec too followed suit. Inspired by France's initiative, it tabled its Bill 197, entitled *An Act to amend the Consumer Protection Act to Fight Planned Obsolescence and Assert the Right to Repair Goods*.<sup>7</sup> Similar initiatives mushroomed elsewhere. But nowhere has the very

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<sup>2</sup> *Consumer Protection Act*, CQLR c P-40.1 at s 38 [CPA].

<sup>3</sup> Claude Déméné & Anne Marchand, “Exploring Users' Practices through the Purchase, Use and Disposal Phases to Reduce the Environmental Impact of Electronic Products: A Case Study on Televisions” (2016) 29 J Research for Consumers 4.

<sup>4</sup> Claude Déméné & Anne Marchand, “Exploring Barriers and Drivers Related to the Repair of Electronic Products” (2016) 12:1 Intl J Sustainability Policy & Practice 1.

<sup>5</sup> *Loi n° 2015-992 du 17 août 2015 relative à la transition énergétique pour la croissance verte*, JO, 18 August 2015, 14263, n°0189 [*Loi relative à la transition énergétique pour la croissance verte*].

<sup>6</sup> *Ibid* at s L.441-2.

<sup>7</sup> Bill 197, *Loi modifiant la Loi sur la protection du consommateur afin de lutter contre l'obsolescence programmée et de faire valoir le droit à la réparation des biens*, 1st Sess, 42nd Leg, Québec, 2019 [*Bill*

phenomenon of programmed obsolescence been seriously studied. Its very existence has been largely presumed. There are a plethora of data and statistics with respect to the durability of various classes of products. Consumers' literature and social media fuel the suspicion that the premature death of objects is part of a greater industrial plan or conspiracy. We remain skeptical. Legal documentation contains very little evidence of the engineered practice of obsolescence forcing the acquisition of a replacement product offered by the same maker. Is programmed obsolescence a specific and provable practice to be regulated or is it a vague, cathartic expression which diffuses our ambiguous sentiments about consumption and capitalism?

This article is an attempt to understand the grammar of obsolescence: how the word came into being and what narratives have carried it over to the present day. The exercise is to a great extent historical and epistemological. It questions the inherent conditions of modern economy. In fact, we suspect obsolescence might have been a natural companion to the market economy before it acquired a negative ring. In theory, the market owes its dynamism to the large volume of transactions explaining why the replacement rate of goods is taken as a positive indicator. After all, the creative destruction process implies a constant substitution of solutions and products for the benefit of all.<sup>8</sup> The modern views on innovation suggests that obsolescence is consubstantial to technological progress. Obsolescence, in the evolutionary approach of modern economy, is the natural consequence of novelty and improvement. Yet, in recent years, it has caught the eye of the regulator and lawmakers. Programmed obsolescence invites us to research the reasons why manufacturers would jeopardize the goodwill built in their brands by sabotaging their own products or rendering them purposely less effective.

Thus, our journey begins at the turn of the 20<sup>th</sup> century in the United States with an original idea, that of "planned obsolescence" (I). The name of Bernard London is indissociable to an expression of which he is regarded as the author. Any proper research on the origin of obsolescence irremediably starts with him. In 1932, he published his work *Ending the Depression Through Planned Obsolescence*<sup>9</sup>. His concept of planned obsolescence consists in assigning a legal term on the use of products in order to force their replacement, a solution to increase production and employment. London's proposal was an institutional response to overproduction and stalled consumption. A point of interest already emerges: the idea of planned obsolescence developed in London's work has little to do with programmed obsolescence as it is understood nowadays. Yet, the two expressions are used interchangeably. Our inquiry into the evolution of the meaning of obsolescence compels us, however, to distinguish London's *planned* obsolescence from today's *programmed* obsolescence. The former is a theoretical policy plan designed to accelerate the retirement of goods under state supervision to boost domestic economy.

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197]. The English version erroneously uses the expression "planned obsolescence" instead of "programmed obsolescence".

<sup>8</sup> Joseph Schumpeter, *Capitalism, Socialism, and Democracy*, 3rd ed (New York: Harper, 1950) at 81–86.

<sup>9</sup> Bernard London, *Ending the Depression Through Planned Obsolescence* (New York: 1932) [London, *Ending The Depression*].

The latter refers to actual strategies put in place by manufacturers, to the same end, but for their own benefit. This clarification, which is perhaps the first contribution of this article, brings to the fore the first movement of a dialectic between the two variations of obsolescence. They are related, but distinct. This text, therefore, maintains the distinction between planned and programmed obsolescence. A second point is worth mentioning. They both arise in time of crisis and are tales about modernity. Planned obsolescence is a child of the Great Depression; conversely, programmed obsolescence is the belated realization that consumption runs amok and threatens our very existence on earth. The crisis here is ecological.

The scope of the article expands beyond London's works. Looking for an answer as to why "planned obsolescence" appeared at this exact moment under the pen of a self-taught business man, we delved into the grey matter left by intellectuals of the time in hopes of finding the origins of this notion. We found that obsolescence belongs to a complex network of political ideas and themes already in place capturing the social dimensions of rapid industrialization. It was, in a sense, an archeological dig. New York in the 1920's was the site to excavate. London was living in New York at the time. Our research led us to the work of the unorthodox economist Thorstein Veblen, a New Yorker as well, who published some of his most important works at the time London published his pamphlets. It also revealed an unexpected filiation between Veblen and the little known Technocracy movement and its enigmatic leader Howard Scott. The Technocracy movement grew after WWI and expanded to the United States and Canada afterwards. The history of the movement and its ideological foundations help in restoring the epistemological dimension of obsolescence.

The second section presents two stories of obsolescence that took place in the past century (II). They are selected moments. Here, we enter surreptitiously into the domain of the law, but only inasmuch as it gives us the opportunity to observe documented facts that might match our definition of programmed obsolescence. Obsolescence stories, as they emerge from our case studies, are stories of disruptions under irrepressible technological changes. They expose the uneasy relationships between law and science. They show that the part played by law is essentially to mitigate the costs and social impacts of technological changes on society. These stories offer concrete examples of historical instances where the liability of the manufacturers was considered. The first case is another inescapable station on our journey to the origins of obsolescence. It is the light bulb affair. In the 1920s, under the leadership of General Electric, the largest light bulb manufacturers established an international alliance that controlled the quality and properties of light bulbs. The second case is the Y2K conundrum, during which fear arose due to computers and other machines' inability to record the presence of the new millennium. One can retrospectively question the liability of programmers who were well aware of the limits of the software.

The last section of the article draws on our historical and philosophical excursions (III). It builds on the two previous sections and the observations we have made along the way to better understand the recent legislative initiatives tackling programmed obsolescence. While these new legislative mechanisms have yet to be tested in court, some cases have drawn the attention of the media and consumer

organizations, which have painted them as instances of obsolescence. The Apple Batterygate, which arose following Apple's 2017 admission that it had throttled the performance of iPhones to avoid unexpected shutdowns, reminds us that assessing the legality or illegality of obsolescence is a highly complex task. Obsolescence, and in particular the obsolescence of software-enabled devices, continues to fall outside the purview of the law. It seems, once again, to defy the law.

## **I—Planned Obsolescence**

This section situates us in the United States at the turn of the 20<sup>th</sup> century when the term “planned obsolescence” was first coined by philanthropist and dilettante politician Bernard London. In a series of short texts published between 1932 and 1935, London outlined possible policy solutions to end the Great Depression. He proposed to set a legal term for the use of products to force their replacement and boost production, consumption and employment. His solution was meant to resolve what was then perceived as a cruel contradiction: technology and machines optimized production and allowed for a greater quality and quantity of products - the materialistic definition of progress. However, American households, crippled by debt and plagued by unemployment, were unable to buy these products. The increasing output capacity did not meet the fluctuating spending power. The Great Depression magnified the causal or consequential links between the cogs in the machine of the modern market economy. The need to understand the economic operations and their complexities drove the development of new theories and provoked intense debate. Unsurprisingly, this period saw the emergence of a literature examining patterns of consumption and an increasing interest for the role of obsolescence.

London's papers will be presented first (A). His views will be analyzed in the broader intellectual context in order to grasp the social and economic changes brought by modernity. To better situate London's ideas, the second section will draw on the work of one of the most influential socio-economist of his time, Thorstein Veblen (B). Politicians and intellectuals alike, represented here by London and Veblen, sought ways to gain better control and understanding over the economy at a time where innovation in technology placed greater importance on technical expertise, thus shifting the relevant knowledge from the realm of human sciences to the schools of engineers. The Technocracy movement, born in New York in the 1930s and rooted in the fertile ground of Veblen's ideas, exemplifies the rendezvous set by the Great Depression, one that called for a reflection on the articulation between modern economy, science and society. The Technocracy movement will be presented in the third part (C). The theme of obsolescence is the common thread that holds the three parts of this story together.

## **A—London's Law of Obsolescence**

Little is known of the life of Bernard London. He is reported to be a Russian-born successful real estate broker who became active in New York financial, political and

academic circles in the 1920s and 30s.<sup>10</sup> His essays were self-published and contained little to no references, suggesting that he was a self-taught author with no formal economic training. In 1932, he introduced the concept of planned obsolescence in his pamphlet *Ending the Depression Through Planned Obsolescence*.<sup>11</sup> Briefly stated, planned obsolescence consists in assigning a lease of life to products so as to limit their duration. The essay became the first chapter of a small book, *The New Prosperity: Permanent Employment, Wise Taxation and Equitable Distribution of Wealth*, published in 1933.<sup>12</sup> In this piece, he further details his proposed solution for economic recovery and the creation of a governmental emergency taskforce in charge of preventing “any breakdown in the nation’s economic structure.”<sup>13</sup> In 1935, London published his last work, *Rebuilding a Prosperous Nation through Planned Obsolescence*, which presents planned obsolescence as a solution to the real estate crisis.<sup>14</sup>

While London is known for coining the term “planned obsolescence,” the concept was brewing in the 1920s. In 1928, a few months before the crash, Justus George Frederik, business executive and founder of the Advertising Men’s League of New York, suggested that “progressive obsolescence” was the path toward increased consumption:

We must induce people who can afford it to buy a greater variety of goods on the same principle that they now buy automobiles, radios and clothes, namely: *buying goods not to wear out, but to trade in or discard after a short time, when new and more attractive goods or models come out...* Therefore the one salvation of American industry, which has the capacity for producing 80 to 100 percent more goods than are now consumed, is still to foster more progressive obsolescence principle, which means buying for up-to-datedness, efficiency, and style, buying for...the sense of modernness rather than simply for the last *ounce of use*.<sup>15</sup>

Similarly, the emergence of the concept of “consumer engineering,” the increasing interest for the value of design and the consolidation of marketing as a discipline,

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<sup>10</sup> Giles Slade, *Made to Break: Technology and Obsolescence in America* (Cambridge, MA: Harvard University Press, 2006) at 72; Vinay Gidwani, “For a Marxist Theory of Waste: Seven Remarks” in Jini Kim Watson & Gary Wilder, eds, *The Postcolonial Contemporary: Political Imaginaries for the Global Present* (New York: Fordham University Press, 2018) at 187.

<sup>11</sup> London, *Ending The Depression*, *supra* note 9.

<sup>12</sup> Bernard London, *The New Prosperity: Permanent Employment, Wise Taxation and Equitable Distribution of Wealth* (New York: 1933) [London, *New Prosperity*].

<sup>13</sup> *Ibid* at 30.

<sup>14</sup> Bernard London, *Rebuilding a Prosperous Nation Through Planned Obsolescence* (New York: 1935). Unlike his previous work, this last piece appears to be a non-solicited report intended primarily for government officials, not the general public.

<sup>15</sup> J George Frederick, “Is Progressive Obsolescence the Path Toward Increased Consumption?”, *Advertising and Selling* 11:10 (5 September 1928) 19 at 19–20, 44. His wife, economist Christine Frederick, made a similar point in 1929 in Christine Frederick, *Selling Mrs. Consumer* (New York: Business Bourse, 1929) (arguing that “America’s triumphs and rapidity of progress are based on *progressive obsolescence* [emphasis in original]” at 246).

further emphasized and articulated the role of obsolescence as a tool to stimulate the consumption of goods. In 1932, Roy Sheldon and Egmont Arens, advertising gurus, co-authored the book *Consumer Engineering: A New Technique for Prosperity*, in which they presented the concept of “obsolescence”:

Obsolescence is another device for stimulating consumption. This element of style is a consideration in buying many things. Clothes go out of style and are replaced long before they are worn out. That principle extends to other products—motorcars, bathrooms, radios, foods, refrigerators, furniture. People are persuaded to abandon the old and buy the new in order to be up-to-date, to have the right and correct thing. Does there seem to be a sad waste in the process? Not at all. Wearing things out does not produce prosperity, but buying things does.<sup>16</sup>

Progressive obsolescence and obsolescence prefigured the modern field of cognitive studies on consumer behaviour. The concepts also signaled the birth of industrial design and an appetite for new forms of intellectual property protections for distinguishing guise. These early variations of obsolescence claim that controlling, or at least stimulating the replacement of goods before they are out of use, is key to avoiding the saturation point of markets. The role of consumption in driving the economic engine led Joseph Mazur, a New York City banker, to conclude that “obsolescence has been a vital ingredient in American business prosperity”. He acknowledged the role of obsolescence by wear, but further highlighted obsolescence due to consumers’ changing tastes.<sup>17</sup> The literature on consumer behaviour and its emphasis on advertising techniques aimed at diminishing the desirability of older goods reflects a growing realization in the first half of the 20th century that physical deterioration over time is not the sole agent motivating the replacement of products. Businesses could start engineering early obsolescence to stimulate consumption., Alternatively, they could introduce, at an accelerated pace, similar but slightly improved or redesigned products into the market. Today, research is being conducted on aesthetic, psychological<sup>18</sup> or cosmetic obsolescence to better understand how consumers perceive the utility and value of their goods.<sup>19</sup> London may well have encountered the terminology and ideas emerging in the field of advertising during his time. His work indeed reflects the same underlying objective of supporting consumption within a linear economy rhythm by the replacement of goods and investments.

London’s concept of planned obsolescence, however, relied on regulation

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<sup>16</sup> Roy Sheldon & Egmont Arens, *Consumer Engineering: A New Technique for Prosperity* (New York: Harper and Brothers, 1932) at 7; Slade, *supra* note 10 at 66–67.

<sup>17</sup> Joseph Mazur, *American Prosperity: Its Causes and Consequences* (New York: The Viking Press, 1928) at 97.

<sup>18</sup> Claudia Déméné & Anne Marchand, “L’obsolescence des produits électroniques : des responsabilités partagées” (2015) 10:1 Ethics Forum 4 [Déméné & Marchand, “L’obsolescence des produits électroniques”].

<sup>19</sup> Debra Lilley et al, “Cosmetic Obsolescence? User Perceptions of New and Artificially Aged Materials” (2016) 101 Materials & Design 355.



and not on marketing strategies or other private instruments. Planned obsolescence is intended to curb the natural tendency of the impoverished mass of consumers to use their belongings as much and as long as possible. Interestingly, his emphasis on the role of government and consumption brings his work closer, although not comparable in quality or depth, to that of economists such as John Maynard Keynes who, starting in the 1920s, explored similar themes. In his 1936 book, Keynes argued that the fall in expenditure was a root cause of the Great Depression.<sup>20</sup> In an attempt to understand the factors influencing the propensity to consume, Keynes posited that the amount a community spends partly depends on “subjective needs and the psychological propensities and habits of the individuals,” which, in his opinion, are unlikely to be altered except in “abnormal or revolutionary circumstances.”<sup>21</sup> While the technological revolution at the time greatly increased production capacity, the cause of unemployment, he argued, was the lack of expenditures within an economy, which decreases aggregate demand:

When involuntary unemployment exists, the marginal disutility of labour is necessarily less than the utility of the marginal product. Indeed it may be much less. For a man who has been long unemployed some measure of labour, instead of involving disutility, may have a positive utility. If this is accepted, the above reasoning shows how “wasteful” loan expenditure may nevertheless enrich the community on balance. Pyramid-building, earthquakes, even wars may serve to increase wealth, if the education of our statesmen on the principles of the classical economics stands in the way of anything better.<sup>22</sup>

In his view, times of crisis require structural intervention by the state to generate wealth throughout the economy. Public spending policies, such as the New Deal, which were implemented later in the century and helped redress the economy, gave unquestionable credit to his theories.<sup>23</sup>

Naturally, writing in 1932, London may not have had access to Keynes’ insights. He did not have the ambition to reinvent modern economy either. Unlike Keynes who supports government intervention only in times of crisis, London’s proposal does not seem to have the same temporality.<sup>24</sup> Both, however, are

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<sup>20</sup> John Maynard Keynes, *The General Theory of Employment, Interest and Money* (London, UK: Palgrave Macmillan, 1936). See also Peter Temin, *Did Monetary Forces Cause the Great Depression?* (New York: WW Norton and Company, 1976).

<sup>21</sup> Keynes, *supra* note 20 at 81. See the factors in *ibid* at 95.

<sup>22</sup> *Ibid* (Keynes used the term loan expenditure “to include both public investment financed by borrowing from individuals and also any other current public expenditure which is so financed” at 114).

<sup>23</sup> See Milton Friedman & Anna Jacobson Schwartz, *The Great Contraction 1929–1933* (Princeton: Princeton University Press, 1965). See also Karl Brunner, ed, *The Great Depression Revisited* (Boston: Martinus Nijhoff Publishers, 1981). In the 1960s and 1970s, however, the Monetarist, including the likes of Friedman and Schwartz, started questioning Keynesian supremacy and offered their own explanation for the Great Depression, emphasizing the “Great Contraction” of the money stock as its main cause.

<sup>24</sup> London, *Ending The Depression*, *supra* note 9 (“[t]he present deadlock is the inevitable result of traveling along blind alleys. Chaos must unavoidably flow from an unplanned economic existence. In the future, we must not only plan what we shall do, but we should also apply management and planning to undoing the

sympathetic to the idea of a planned economy in some circumstances and, to a certain degree, to increasing expenditures, ensuring employment and improving the living conditions of the mass.<sup>25</sup> Their work similarly highlights the role of the government in fostering the conditions necessary to enable and provoke consumption. In this regard, London stages, with undeniable political wit, the same constitutive elements of what Keynes called “involuntary unemployment.” The problem of underconsumption and the decline of buying power is in fact a recurring theme in *Ending the Depression Through Planned Obsolescence*: “Factories, warehouses, and fields are still intact and are ready to produce in unlimited quantities but the urge to go ahead has been paralyzed by a decline in buying power.”<sup>26</sup> Many at the time shared London’s belief that underconsumption was the prime driver of the Great Depression, rather than the symptom of more complex conjunctures that experts would take decades to unfold.<sup>27</sup> The logic seems impeccable: underconsumption leads to overproduction which, in turn, and absent sufficient demand, results in unemployment.

Overproduction or underconsumption were often presented, alternatively, as self-explanatory causes of unemployment when they were symptomatic of far more complex causes.<sup>28</sup> In *Ending the Depression*, London suggests to boost the economy by legally reducing the life of consumable goods, from kitchen appliances to buildings and wheat.<sup>29</sup> Planned obsolescence is, for London, a state-led initiative:

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obsolete jobs of the past” at 5). London explains that “[his] suggested remedy would provide a permanent source of income for the Federal Government and would relieve it for all time of the difficulties of balancing its budget” (*ibid* at 6). See also London, *New Prosperity*, *supra* note 12 (noting that emergency relief is not enough and has to be combined with solutions aimed at “permanent improvement”: “[t]he old method is temporary cure; but mine is permanent intervention, which will obviate costly cure” at 61).

<sup>25</sup> Utilitarian economic thinking had also gained traction in the decades preceding the publications of London and Keynes. For instance, Cambridge economist Arthur Cecil Pigou elaborated his concepts of “marginal private product of an activity” (the benefits obtained by a private party undertaking an activity) and “marginal social product of an activity” (the benefits obtained by society from this activity) to understand some forms of market failures such as monopolies. See Arthur Cecil Pigou, *The Economics of Welfare* (London, UK: Macmillan, 1920); Roger Backhouse, *The Ordinary Business of Life: A History of Economics from the Ancient World to the Twenty-First Century* (Princeton: Princeton University Press, 2004) (noting that, with these concepts, “Pigou offered a detailed programme for economic policy, virtually providing a blueprint for the welfare state” at 274). In *General Theory*, Keynes criticized Pigou’s Theory of (Un)Employment: see Keynes, *supra* note 20 at 240–48. However, Pigou’s work shares some similarities to London’s proposal, which calls upon the government to implement an adequate economic organization of society to ensure that the welfare of society is not “left to pure chance and accident” and “the unpredictable whims and caprices of the consumer” thus suggesting an arrangement of individual benefits and societal benefits to avoid market failures: see London, *Ending The Depression*, *supra* note 9 at 4.

<sup>26</sup> London, *Ending The Depression*, *supra* note 9 at 4; Gidwani, *supra* note 10 at 187; London, *New Prosperity*, *supra* note 12 (arguing “the real cause of unemployment is not overproduction but underconsumption” at 28).

<sup>27</sup> See Gregory R Woiool, “Plans to End the Great Depression from the American Public” (2012) 53:4 Labor History 571. In 2012, the economist Gregory R Woiool reviewed thousands of letters sent to the Roosevelt administration by Americans during the Great Depression and found that a majority of the correspondences proposed measures to increase consumer purchasing power and consumer spending to solve the issue of underconsumption (*ibid* at 573).

<sup>28</sup> See Lionel Robbins, *The Great Depression* (New York: Routledge, 2009).

<sup>29</sup> London, *Ending the Depression*, *supra* note 9 at 13, 15.

I would have the Government assign a lease of life to shoes and homes and machines, to all products of manufacture, mining and agriculture, when they are first created, and they would be sold and used within the term of their existence definitely known by the consumer. After the allotted time had expired, these things would be legally “dead” and would be controlled by the duly appointed governmental agency and destroyed if there is widespread unemployment. New products would constantly be pouring forth from the factories and marketplaces, to take the place of the obsolete, and the wheels of industry would be kept going and employment regularized and assured for the masses.<sup>30</sup>

This peculiar plan was a necessity since, according to London, American consumers had blatantly ignored the *law of obsolescence*: “[t]hey are using their old cars, their old tires, their old radios and their old clothing much longer than statisticians had expected on the basis of earlier experience.”<sup>31</sup> Based on these observations, London focuses on the acts of expenditures of consumers, which did not increase in line with the increased productivity and technological innovation of the market. London believes that the solution lies in the intervention of statesmen, not in the natural dispositions of the economy, stating that “[t]he existing troubles are man-made, and the remedies must be man-conceived and man-executed.”<sup>32</sup> The market, as well as traditional economic models, had failed to redress the situation.

As we have seen, London’s plan builds on the themes discussed by academics, the advertising world, and the media: market failures, prices, overproduction, underconsumption, unemployment, obsolescence.<sup>33</sup> London’s work thus distills a certain impression of *déjà vu*, using for its own political agenda themes that were already well articulated by scholars before him. He, too, sees the economy through its social actors—the government, the entrepreneurs, the capitalists, the engineers and the consumers—and not just through the narrow prism of the price mechanism.<sup>34</sup> London’s proposal also reflects a desire, in dire times, to explain society

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<sup>30</sup> London, *Ending the Depression*, *supra* note 9 at 6. London adds, “I propose that when a person continues to possess and use old clothing, automobiles and buildings, after they have passed their obsolescence date, as determined at the time they were created, he should be taxed for such continued use of what is legally “dead”” (*ibid* at 8).

<sup>31</sup> *Ibid* (noting, “[p]eople generally, in a frightened and hysterical mood, are using everything that they own longer than was their custom before the depression” at 4).

<sup>32</sup> *Ibid*.

<sup>33</sup> London, *New Prosperity*, *supra* note 12 at 28.

<sup>34</sup> London’s prose shares affinities with the writings of Karl Marx. See Gidwani, *supra* note 10 (explaining “London criticizes as detrimental to society the structural asymmetry between the owner of the means of production (capitalist) and those who must sell for a wage the only means of production at their disposal, a power that can be neither stored nor accumulated (laborer)” at 188). Borrowing the same rhetoric, London writes in *Ending the Depression*, *supra* note 9 at 10 that “the product of the worker’s toil continues to benefit and produce income for its owner long after the one whose sweat create it.” The central role of the state in London’s plan—not only of statesmen but also of engineers—recalls scientific socialism and materialism. These are ideologies that led to economic planning—with planned obsolescence being a peculiar manifestation of it.

as a piece of social engineering whose design can be improved:

Under the direction of the Secretary of Emergency the Government's engineers, economists, mathematicians and actuaries would work formulating the plans and setting up the machinery for putting into operation the program of planned obsolescence.<sup>35</sup>

Hence, London adopts a pseudo-scientific approach to the economy by entrusting experts, as government agents, with the task of calculating the replacement rate of products:

Furniture and clothing and other commodities should have a span of life, just as human have... The original span of life of a commodity would be determined by competent engineers, economists and mathematicians, specialists in their fields, on behalf of the Government.<sup>36</sup>

His faith in engineering expertise and technology was not unorthodox and must be viewed in the context of the rise of the Technocracy movement in America. The technocracy ideology, influenced to some extent by the work of renowned intellectuals such as Thorstein Veblen, was actively promoted by a group of converted engineers and bohemian intellectuals based in New York and led by Howard Scott. The movement gained some momentum in Western Canada as well. The following part examines their probable influence on London's work.

## **B—Social Engineering: The Influence of Thorstein Veblen**

London may have been well aware of the emerging movement in the 1920s calling for the planning of the economy and the creation of a “Soviet”<sup>37</sup> of engineers. The idea had been brilliantly exposed in the work of Thorstein Veblen in 1929 and thereafter loosely reused by the Technocracy movement. The Technocrats, as they became known, were a group of men who purported to empower scientists and engineers to replace speculators and businessmen deemed responsible for the Great Depression. London, a businessman himself, is careful not to engage in a diatribe against the behaviours of his kind. He is, nevertheless, fully aware of the accusations. In his 1932 pamphlet, he wrote the following:

If this plan were in operation, speculators would not acquire fortune simply by manipulating and creating false values or synthetic wealth. If it were decreed that the life of wheat were to be no more than two years, for example, no one would buy the grain solely for speculation.<sup>38</sup>

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<sup>35</sup> *Ibid* at 30.

<sup>36</sup> London, *Ending the Depression*, *supra* note 9 at 12.

<sup>37</sup> Thorstein Veblen, *The Engineers and the Price System* (Kitchener: Batoche Books, 2001), online (pdf): [McMaster University <socialsciences.mcmaster.ca/econ/ugcm/3113/veblen/Engineers.pdf>](http://McMaster University <socialsciences.mcmaster.ca/econ/ugcm/3113/veblen/Engineers.pdf>) at 86 [Veblen, *Engineers and the Price*].

<sup>38</sup> London, *Ending the Depression*, *supra* note 9 at 15.

The work of London here intersects with themes developed by Veblen, starting with his attraction for a planned economy. Veblen was one of the first social philosophers to point out that money follows the path of profit regardless of people or productivity, thus creating a real disconnect between finance and the real economy.<sup>39</sup> Veblen supports the idea of enrolling technicians and industrial experts in the government. He was convinced that their technical knowledge would make them better leaders because they are able to understand the impacts of technology on society. Entrepreneurs, and capitalists in general, he observed, had lost touch with reality. This distortion, in his own words, led to the “uneconomical use of material resources, and an incredibly wasteful organization of equipment and manpower in those great industries where the technological advance has been most marked.”<sup>40</sup>

By the time *Ending Depression* was published in 1932, Veblen had already outlined the idea of a “Soviet of Technicians” to conduct the economy at the time of mechanization.<sup>41</sup> Veblen was already a well-established scholar of the left, albeit controversial, and a prominent figure in American economics. However, he would always remain “an outsider to the mainstream of American society.”<sup>42</sup> He first garnered attention in 1899 with *The Theory of the Leisure Class*, in which he raised the issue of conspicuous consumption and developed his theory of consumption by emulation as a trigger of competitive spending.<sup>43</sup> In 1914, he published *The Instinct of*

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<sup>39</sup> See John Patrick Diggins, “Thorstein Veblen and the Literature of the Theory Class” (1993) 6:4 Intl J Politics Culture & Society 481 (arguing that “Veblen’s greatest contribution to economic thought [was] the demonstration that industry and business operated for different principles and thus maximization of output can jeopardize the maximization of profit” at 482).

<sup>40</sup> See Veblen, *Engineers and the Price System*, *supra* note 37 at 40:

[T]hey have been unable to rely on the hired-man’s-loyalty of technologists whom they do not understand. The result has been a somewhat distrustful blindfold choice of processes and personnel and a consequent enforced incompetence in the management of industry, a curtailment of output below the needs of the community, below the productive capacity of the industrial system, and below what an intelligent control of production would have made commercially profitable.

<sup>41</sup> Interestingly, despite giving engineers a key role in his plan, London avoids tackling the topic of mechanization. Numerous writings, at that time, accused machines and their makers of stealing the jobs of millions. A case in point is the essay published in *Fortune* entitled the “Obsolete Men” written by three-time Pulitzer prize recipient Archibald MacLeish “condemning the ‘technological unemployment’ that had led to ‘a serious decline in the number of wage earners in basic industries.’” See Archibald MacLeish, “Obsolete Men”, *Fortune* 6 (December 1932) at 25–26, 91–92, 94. See also Henri Elsner, *Messianic Scientism: Technocracy: 1919-1960* (PhD Thesis, University of Michigan, 1962), online: <archive.org/details/pressontecnocra00unse\_14/mode/2up/search/sect>, which was later published as Henri Elsner, *The Technocrats: Prophets of Automation* (New York: Syracuse University Press, 1967) at 19, 22 [Elsner, *The Technocrats*].

<sup>42</sup> Diggins, *supra* note 39 (Diggins uses superlatives to describe the importance of Veblen’s work and calls him, not without admiration, “one of the strangest figures of American intellectual life” at 482); Backhouse, *supra* note 25 at 195.

<sup>43</sup> Thorstein Veblen, *The Theory of the Leisure Class: An Economic Study of Institutions* (New York: Macmillan, 1899) online (pdf): [Columbia Law School <moglen.law.columbia.edu/LCS/theoryleisureclass.pdf>](http://Columbia Law School <moglen.law.columbia.edu/LCS/theoryleisureclass.pdf>) [Veblen, *Theory of Leisure Class*] (noting “[t]he motive that lies at the root of ownership is emulation; and the same motive of emulation continues active in the further development of the institution to which it has given rise and in the development of all those

*Workmanship and The State of Industrial Arts* in which he elaborated on the impact of the process of mechanization on class divisions and knowledge distribution. While businessmen are well versed in finance, accounting and management, they know little about the technology from which they derive profits. The theme runs through Veblen's work: the modern businessman is out of touch with technology, unfit and incompetent to exercise surveillance over the processes of industry.<sup>44</sup> For Veblen, technological changes impact social structures and new knowledge is necessary to govern the industrial society. In his ideal government, the role of the engineer is predominant. They are the central figures of *The Engineers and the Price System* published in 1921.<sup>45</sup> In this book, Veblen called upon technicians to take command, replacing those whose "services, proximate or remote, to society are often of quite a problematical character" and "are within the law and within the pale of popular morals."<sup>46</sup> In the final

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features of the social structure which this institution of ownership touches. The possession of wealth confers honour; it is an invidious distinction" at 13–14). Some of his thoughts are visionary descriptions of modern consumption. See e.g. *ibid* at 48–49:

This suggests that the standard of expenditure which commonly guides our efforts is not the average, ordinary expenditure already achieved; it is an ideal of consumption that lies just beyond our reach, or to reach which requires some strain. The motive is emulation—the stimulus of an invidious comparison which prompts us to outdo those with whom we are in the habit of classing ourselves. Substantially the same proposition is expressed in the commonplace remark that each class envies and emulates the class next above it in the social scale, while it rarely compares itself with those below or with those who are considerably in advance.

Standards of repute and canons of conduct, not necessity or satisfaction of reasonable needs, are the vectors of consumption. Reification is not so much a question of production than identification to a class and style. Commodities send signs of social affiliation and success. Veblen's provocative style remains inimitable and is still very effective. See e.g. *ibid* at 40:

From the foregoing survey of the growth of conspicuous leisure and consumption, it appears that the utility of both alike for the purposes of reputability lies in the element of waste that is common to both. In the one case it is a waste of time and effort, in the other it is a waste of goods. Both are methods of demonstrating the possession of wealth, and the two are conventionally accepted as equivalents. The choice between them is a question of advertising expediency simply, except so far as it may be affected by other standards of propriety, springing from a different source.

<sup>44</sup> Thorstein Veblen, *The Instinct of Workmanship and the State of the Industrial Arts* (New York: Macmillan, 1914) at 222 online (pdf): [Internet Archive <archive.org/stream/instinctworkman00veblgoog?ref=ol>](https://www.archive.org/stream/instinctworkman00veblgoog?ref=ol) [Veblen, *Instinct of Workmanship*]. Veblen's critics are assertive: "the training in pecuniary wisdom that makes up the career of the typical businessman is after all of little avail in the way of technological insight or efficiency, as witness the ubiquitous mismanagement of industry at the hands of businessmen who are, presumably, doing their best to enhance the efficiency of the industries under their control with a view to the largest net gain from the output" (*ibid* at 193).

<sup>45</sup> Veblen, *Theory of Leisure Class*, *supra* note 43, which is a collection of essays released in 1919 in *The Dial*, a New York magazine where Veblen worked as an editor. It deals with many themes dear to its author, from the social dimension of the industrial system to the shortcomings of the classical economics theories which remained static and failed to take into account technological change. See Thorstein Veblen, "The Limitations of Marginal Utility" (1909) 17:9 *J Political Economy* 620 [Veblen, "Limitations of Marginal Utility"] ("[t]o the modern scientist the phenomena of growth and change are the most obtrusive and most consequential facts observable in economic life" at 621). Veblen adds, "[i]t is characteristic of the school that wherever an element of the cultural fabric, an institution or any institutional phenomenon, is involved in the facts with which the theory is occupied, such institutional facts are taken for granted, denied, or explained away" (*ibid* at 622).

<sup>46</sup> Thorstein Veblen, "Industrial and Pecuniary Employments" (1901) 2:1 *Publications American Economic Assoc* 190 at 204 [Veblen, "Industrial and Pecuniary Employments"].

chapter, “A Memorandum on a Practical Soviet of Technicians,” he proposes to dislodge the “captains of the industry.”<sup>47</sup> They are the “vested interests and their absentee owners.”<sup>48</sup> Veblen’s belief that businessmen are ill-suited to manage production stems from his theory of value that distinguishes pecuniary value (or market value) and industrial value (or “material serviceability”).<sup>49</sup> The former relies essentially on the price system which presents itself as a teleological mode of valuation whose prime purpose is to determine profit. Ultimately, however, this business or commercial value, as reflected in the price system, has no or very little connection to the industrial value.<sup>50</sup> Industrial value is about assessing the state of progress and the overall evolution of a given civilization. As such, the idea of industrial value espouses a sense of collective responsibility in the sharing of technological knowledge by virtue of which the industrial life should not be “organized on a pecuniary basis and managed from the pecuniary side.”<sup>51</sup> The distinction made between industry and business values or, to put it more bluntly, between social progress and profit, foreshadows the current demands to prevent and criminalize programmed obsolescence. Growing concerns for the environmental and social costs of the premature replacement of goods and waste fuels the criticisms against the corporate focus on pecuniary value and private interests to the detriment of the common good, that is, the safeguard of the environment and humanity.<sup>52</sup>

Veblen’s contention that the common stock of technical or pragmatic knowledge must be preserved, developed, and shared also remains particularly relevant to the current discourse on programmed obsolescence. Interestingly, Veblen does not favourably view the use and expansion of intellectual property. For him, the joint stock of knowledge cannot be reserved for private interests:

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<sup>47</sup> Veblen, *Engineers and the Price System*, *supra* note 37 at 101.

<sup>48</sup> *Ibid.*

<sup>49</sup> See Olivier Brette, “Thorstein Veblen on Value, Market and Socioeconomic Progress” (2014) 26:1/2 *European J Economic & Social Systems* 55.

<sup>50</sup> Veblen, “Industrial and Pecuniary Employments”, *supra* note 46 at 228.

<sup>51</sup> *Ibid* at 227.

<sup>52</sup> While programmed obsolescence is in today’s context inseparable from environmental concerns and has become central to many scholars’ work, little attention was given to this issue by their forefathers. The notion of waste finds its way into the writings of Veblen and London but in a very different meaning: one that is not even remotely related to the environment. For them, waste is an economic term describing inefficiency and is not charged with any ecological undertone. In fact, London provides no detail as to waste administration and the necessary resources to collect, store or recycle obsolete goods: see London, *Ending the Depression*, *supra* note 9 at 7–8. As for Veblen, neither the concept of obsolescence nor that of waste—both of which are sporadically used in his writing—relates to the impact of waste on the environment. Veblen’s reflection on capitalism, however, raises the issue of waste, more specifically “conspicuous waste,” which he also refers to as “wasteful consumption”. In *The Theory of the Leisure Class*, wasteful consumption is described as the practice whereby bourgeois elites consume goods, often expensive ones, to parade their wealth and display their financial power in society. He writes the following in *Theory of the Leisure Class*, *supra* note 43 at 40: “[f]rom the foregoing survey of the growth of conspicuous leisure and consumption, it appears that the utility of both alike for the purposes of reputability lies in the element of waste that is common to both. In the one case it is a waste of time and effort, in the other it is a waste of goods. Both are methods of demonstrating the possession of wealth, and the two are conventionally accepted as equivalents”.

The state of the industrial art is a joint stock of knowledge derived from past experience, and is held and passed on as an indivisible possession of the community at large. It is the indispensable foundation of all productive industry, of course, but except for certain minute fragments covered by patent rights or trade secrets, this joint stock is no man's individual property.<sup>53</sup>

As we will see, Veblen's call for knowledge sharing and transparency in the industrial process challenges some of the key ingredients required to implement programmed obsolescence: the lack of information regarding product design and durability and the control of knowledge and technology through private property regimes, such as intellectual property rights. In Veblen's opinion, only a policy focused on industrial knowledge could improve the overall living conditions in modern society:

[T]he mechanical technology is impersonal and dispassionate, and its end is very simply to serve human needs, without fear or favor or respect of persons, prerogatives, or politics. It makes up an industrial system of an unexampled character—a mechanically balanced and interlocking system of work to be done, the prime requisite of whose working is a painstaking and intelligent coordination of the processes at work, and an equally painstaking allocation of mechanical power and materials. The foundation and driving force of it all is a massive body by technological knowledge, of a highly impersonal and altogether unbusinesslike nature, running in close contact with the material sciences, on which it draws freely at every turn.<sup>54</sup>

It follows that engineers, who are “gifted, trained, and experienced technicians who now are in possession of the requisite technological information and experience,” must actively participate in the administration and governance of modern society.<sup>55</sup> They make up “the General Staff of the industrial system, in fact; whatever law and custom may formally say in protest” and while “the ‘captains of industry’ may still vaingloriously claim that distinction, and law and custom still countenance their claim... the captains have no technological value, in fact.”<sup>56</sup> Following the “abdication or dispossession” of the captains of industry, a directorate of technicians would take over the industrial system.<sup>57</sup> The passage from the old to the new system would unfold

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<sup>53</sup> Veblen, *Engineers and the Price System*, *supra* note 37 at 19, 34.

<sup>54</sup> *Ibid* at 81–82.

<sup>55</sup> *Ibid* at 82.

<sup>56</sup> *Ibid*.

<sup>57</sup> Veblen notes the following in *ibid* at 44:

These expert men, technologists, engineers, or whatever name may best suit them, make up the indispensable General Staff of the industrial system; and without their immediate and unremitting guidance and correction the industrial system will not work. It is a mechanically organized structure of technical processes designed, installed, and conducted by these production engineers. Without them and their constant attention the industrial equipment, the mechanical appliances of industry, will foot up to just so much junk. The material welfare of the community is unreservedly bound up with the due working of this industrial system, and therefore with its unreserved control by the engineers, who alone are competent to manage it. To do their work as it should be done these men of the industrial general staff must have a free hand, unhampered by commercial



as follows:

The incoming industrial order is designed to correct the shortcomings of the old. The duties and powers of the incoming directorate will accordingly converge on those points in the administration of industry where the old order has most signally fallen short; that is to say, on the due allocation of resources and a consequent full and reasonably proportioned employment of the available equipment and man power; on the avoidance of waste and duplication of work; and on an equitable and sufficient supply of goods and services to consumers. Evidently the most immediate and most urgent work to be taken over by the incoming directorate is that for want of which under the old order the industrial system has been working slack and at cross purposes; that is to say the due allocation of available resources, in power, equipment, and materials, among the greater primary industries. For this necessary work of allocation there has been substantially no provision under the old order.<sup>58</sup>

Engineers and technical knowledge are the beating heart of London and Veblen's vision of a planned economy. While Veblen calls on experts to design the whole industrial system—its equipment, processes and outcomes, the role that they play in London's proposal is limited to the design of consumable goods. Although their plans do not have the same breadth, they both seek to take control away from agents who pursue their own private interests and who, by doing so, disregard the welfare of society. Engineers appear as guardians of the common good against what London saw as the "unpredictable whims and caprices of the consumer" and the "haphazard, fickle attitudes of owners,"<sup>59</sup> or, in Veblen's works, the profit-seeking-at-any-cost "absentee owners" and "conspicuous consumers."<sup>60</sup>

## C—Technocrats

The inquiry into the social and intellectual scene where London staged his proposal leads us to the Technocracy movement that emerged in the United States during the

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considerations and reservations; for the production of the goods and services needed by the community they neither need nor are they in any degree benefited by any supervision or interference from the side of the owners. Yet the absentee owners, now represented, in effect, by the syndicated investment bankers, continue to control the industrial experts and limit their discretion, arbitrarily, for their own commercial gain, regardless of the needs of the community.

<sup>58</sup> Drawing from Marx, Veblen thought that engineers, rather than workers, would be the ones to overthrow the industrial system. See Lewis Corey, "Veblen and Marxism" (1937) 1 Marxist Q 62; Abram L Harris, "Economic Evolution: Dialectical and Darwinian" (1934) 42:1 J Political Economy 34; Forest G Hill, "Veblen and Marx" in Douglas Dowd, ed, *Thorstein Veblen: A Critical Reappraisal* (Ithaca: Cornell University Press, 1958) at 129–49; Bernard Rosenberg, "Veblen and Marx" (1948) 15:1 Social Research 99; Paul M Sweezy, "The Influence of Marxism on Thorstein Veblen" in DD Egbert and Stow Parsons, eds, *Socialism and American Life*, vol 1 (Princeton: Princeton University Press, 1950) at 473–77.

<sup>59</sup> London, *Ending the Depression*, *supra* note 9 at 4–5.

<sup>60</sup> Veblen, *Engineers and the Price System*, *supra* note 37 at 101; Veblen, *Theory of the Leisure Class*, *supra* note 43 at 40.

interwar period, then spread west and across North America.<sup>61</sup> Chapters and associations affiliated with the movement appeared in Western Canada during the Great Depression. In Manitoba and Alberta, especially, the consequences of the crisis were harshly felt. At the University of Alberta, a dedicated fund allowed for the creation of a unique and vast collection of articles, correspondence of members, pamphlets, and other writings related to the Edmonton and Calgary chapters of Technocracy Inc.<sup>62</sup> Completed in 2007, the archives represent a valuable and underexploited source of documentation for whoever is interested in the social archeology of the industrial age. Technocracy Inc will be our last and third tableau in an effort to contextualize planned obsolescence.

Technocracy grew out of the post-war social, political, and economic turmoil. It presented itself as an apolitical movement to promote a certain idea of modernism and progress. “Growing public recognition of the importance of the scientific method in the operation of a well ordered society has caused the Continental Committee on Technocracy to be formed,”<sup>63</sup> is the incipit of *Introduction to Technocracy*, a 1933 publication to introduce the public to the Technocrats’ program. Presenting itself as a platform to share ideas, the movement invited scientific experts and intellectuals to apply their expertise to find solutions to the economic crisis. They too blamed financiers and businessmen for the Great Depression, who had used technology to further their own interests and, often, in an intentionally suboptimal manner. Their accusations echo Veblen’s notion of “sabotage,” a term that he famously coined to describe business strategies geared towards upholding profitable prices:

Financial business has not only exercised complete control over this field and dictated what should be produced regardless of the resources available, but has also failed in the distribution of the ever-increasing volume of goods and services released by the accelerating rates of energy conversion.<sup>64</sup>

Technocrats believed in a science-based approach to governance—an idea in vogue at the time.<sup>65</sup> Technocracy started under the leadership of Howard Scott as a movement

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<sup>61</sup> Allen Raymond, *What Is Technocracy?* (New York: Whittlesey House, 1933) at 6–7, online: *Internet Archive* <[archive.org/details/whatistechnocrac00tech/page/n3/mode/2up](http://archive.org/details/whatistechnocrac00tech/page/n3/mode/2up)>.

<sup>62</sup> The history of Technocracy in North America is well documented. The movement was actually banned in Canada from 1940 to 1943 due its opposition to the war and position on conscription. Technocrats detailed their position on war in a pamphlet published in 1942 entitled “Total Conscription” addressed to the United States and Canadian governments. See Technocracy Inc, *Total Conscription, Your Questions Answered* (New York: Technocracy Inc, 1942) (“we cannot achieve a fighting national morale and internal efficiency while some citizens gain wealth and economic advantage in war prices, war profits, war wages, and war racketeering through the spilling of the blood of other citizens in defense of the country” at 3).

<sup>63</sup> Howard Scott, *Introduction to Technocracy* (New York: John Day, 1933) at 5 [Scott, *Introduction to Technocracy*].

<sup>64</sup> *Ibid* at 30.

<sup>65</sup> The proceedings before the American Institute of the Electrical Engineers in 1912 suggest a growing recognition and need for technical expertise within the government. See Frank F Fowle, “Going Value” (1912) 31:8 Proceedings American Institute Electrical Engineers 337 at 337:

The decade just completed has witnessed a very important change... brought about almost entirely by the new problems which have sprung into existence with the rapid development of

of engineers committed to “study the physical operation of society”<sup>66</sup> and to answer the call for “science and technology to extend the frontiers of their domain.”<sup>67</sup> The technocratic ideology is first fully articulated in 1933 in a booklet entitled *What is Technocracy?* which reads as a manifesto. It proposes to translate social movements and industrial operations into mass, energy, force and motion.<sup>68</sup> For Technocrats, the physical status of any social system can be measured quantitatively.<sup>69</sup> Adopting a materialistic theory of history, they posit that socio-economic changes are governed by energy, that is, the capacity to do work. In times when the energy available is constant, no social change occurs. However, a few periods were marked by energy increases, which led to social changes referred to as “conversion changes in the rates of energy.”<sup>70</sup>

Although the cross-influence is uncertain, the economic plans envisioned by London and the Technocrats share many commonalities. London is sympathetic to the idea of empowering men of science. Planned obsolescence, as he conceived it, would be implemented by a committee of engineers and accountants responsible for setting the duration of the leases for consumable goods as well as complementary tax credits, thus ensuring that old goods are replaced and new goods purchased. London believed, as Technocrats did, that the application of physical sciences to the problems of society could fix the economy; scientific determinism prevails.<sup>71</sup> Technical expertise is the

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our public utilities. The engineer is now called upon to aid in the solution of the broad question of regulating our public service corporations, and there he finds himself in contact not only with the law but that more interesting field of political science or economics, and almost of necessity he must absorb a good deal of both.

<sup>66</sup> Frank Arkright, *The A B C of Technocracy* (New York: Harper, 1933) at 1.

<sup>67</sup> Raymond, *supra* note 61 at 32ff. See also Scott, *Introduction to Technocracy*, *supra* note 63 at 38. The organization was based in New York City and was initially registered at Columbia University. Nothing justifies this affiliation but for the obvious benefit of bringing some legitimacy to the young organization.

<sup>68</sup> *Ibid* at 7. Although Technocracy was formed in 1920, one can trace its origins to a group of reform minded mechanical engineers called the “New Machine,” some of whom have founded the “Technical Alliance” in 1919, of which Veblen was a member during his time at the New School for Social Research. The Technical Alliance had four primary objectives, which reflect their association to Veblen and later became prevalent themes of Technocracy: (1) uncover waste and leakage in the present industrial system; (2) render estimates of the raw material and human effort necessary to insure the various members of society a given standard of comfort; (3) show graphically how the present system of production and distribution operates; and (4) work out a tentative design of production and distribution completely coordinated. See Elsner, *The Technocrats*, *supra* note 41 at 23.

<sup>69</sup> Scott, *Introduction to Technocracy*, *supra* note 63 at 19.

<sup>70</sup> See *ibid* at 15–16:

From the view point of the technologist, man has experienced but few sweeping social changes, that is, few conversion changes in the rates of energy; and these are widely separated in point of time. The domestication of the crop plants and the development of them in a dim, historic past thrust man into a larger control of his environment—that is, to use a technological term, into a *new energy state*. In the same way, the domestication of animals gave him new powers to command and carried him a little further along the way of control. The introduction of these factors, each in its turn, wrought revolutionary changes in social scheme under which he lived.

<sup>71</sup> See Howard Scott, *The Evolution of Statesmanship: Science and Society* (New York: Technocracy Inc, 1939) [Scott, *Evolution of Statesmanship*]. Many themes are recurring and redundant in the literature produced by the Technocrats along the years. Its quality is uneven and often mediocre.

adequate response to the Great Depression, especially in the context where the crisis is attributed to mismanagement and a poor use of technology leading to goods being produced in excess. Whether London's idea of establishing a committee of experts is inspired by technocratic thoughts remains a supposition.<sup>72</sup>

Nevertheless, some cross-pollination may have occurred and it can be reasonably assumed that London had been acquainted with Technocratic thoughts.<sup>73</sup> After all, London was active in the intellectual and business circles of New York City in the 1930s when the Technocracy movement's popularity was at its peak. His pamphlet *Ending the Depression through Planned Obsolescence* was registered with the Library of Congress on September 21, 1932, one month after Howard Scott first came to widespread national publicity following an interview published in the *New York Times* on August, 21, 1932.<sup>74</sup> The timeline suggests that London was working on his pamphlet at the same time and place where the ideas of Technocrats were gaining ground.<sup>75</sup> From them, London appears to have derived the notion that the problem was a fundamental mismatch between production and consumption, or, in London's words, "disturbed human relationships."<sup>76</sup> Factories were able to mass produce, but they did not have a corresponding demand for their goods. Mass production required mass consumption. Therefore, there was a need to synchronize the tempo of these two facets of the economy. For London and the Technocrats, balancing this equation is a task for engineers who, unlike the owners of the production means, are best placed to examine both variables and design a calculated, well-

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<sup>72</sup> Noteworthy, the Technocrats published virtually nothing of their work until 1933. The only publications available on Technocracy were published by and under the charismatic figurehead of Howard Scott. He or his followers coauthored and edited the *Industrial Workers of the World* monthly magazine. There is no evidence that London met Scott or any of his disciples, who were, however, numerous at the time of the publication of *Ending the Depression*, *supra* note 9 in 1932. Much of the information about Technocracy between 1921–1932 spread through meetings and presentations organized by devoted individuals in different chapters, making it particularly difficult for historians to trace. See William E Akin & William Ernest Akin, *Technocracy and the American Dream: The Technocrat Movement, 1900–1941* (Berkeley: University of California Press, 1977).

<sup>73</sup> This point is also made by others, see e.g. Slade, *supra* note 10 at 72–73.

<sup>74</sup> "Declares Machines Add to Unemployment", *New York Times* (21 August 1932) at f9. Elsner, *supra* note 41 reports on the event: "[t]echnocracy swept across the country in almost every available form. The high point was reached in January, 1933. The *New York Times* alone had no less than sixty articles on Technocracy that month" at 7).

<sup>75</sup> The attention that the movement had gained in the 1930s make these inferences very plausible. On January 13, 1933, the Technocrats organized an important event at the Hotel St-Pierre in New York City. The event was much anticipated and Scott, the emblematic leader of the Technocrats delivered a speech on how engineers and technocracy could save America and assure for all the promised state of abundance and self-sufficiency. The event was broadcasted nationally. Of all accounts, it was a disaster and somewhat the death knell for the movement which at this very moment lost most of its capital. See Allen Gordon, "Scott, the Technocrats, Is Sold Out!", *Macfadden Weekly* (24 November 1934) describing the event at 4:

The beginning of the act that night was tense; there was an expectant hush as the leading figure in the greatest economic drama of modern times took the stage. He began to speak haltingly; he groped for words; he sneered at times; he appeared absolutely inarticulate... Scott spoke of ergs and energy certificates and capitalistic economics—all that came over to the heaters was a jumble of unfinished and half-baked sentences.

<sup>76</sup> London, *Ending the Depression*, *supra* note 9 at 4.

balanced solution. Technocrats argued however that, despite having played a role in bringing into existence the vast amount of America's wealth by designing the means of production, engineers had ceded their role in the distribution of wealth to business persons and politicians.<sup>77</sup> Technocrats believed that engineers must regain political power and maintain some control over the technology they design to balance the equation of production and consumption. If not, technology would be left in the hands of businesspeople and owners of the means of production.

Although the Technocrats adopted much of Veblen's lexicon, they minimized his influence, probably in an attempt to preserve the intellectual originality of the movement's leader, Howard Scott.<sup>78</sup> The Soviet of Engineers became, under the Technocrats, the Technate<sup>79</sup> and the "price system" was to be replaced by a new system based on energy conversion.<sup>80</sup> The technocratic movement rapidly lost traction. The favour it initially gained quickly vanished. It was criticized for lacking direction and offering few solutions to the problems that they denounced.<sup>81</sup>

The affinity found in the works of Veblen, in the Technocrats' platform and in London's writings is certainly not coincidental. Cross-influence seems highly plausible. Even without direct contributions, their works provide the necessary background to understand planned obsolescence as it was initially understood. Taken in its intellectual context, London's plan stems from a belief that an unplanned economy is suboptimal and wasteful, creating surplus supplies, and leaving workers unemployed. Unlike his contemporaries, however, London considers that "[t]he sound remedy lies in rehabilitating the consumer, rather than in curtailing the producer."<sup>82</sup>

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<sup>77</sup> Scott, *Introduction to Technocracy*, *supra* note 63 at 11; Scott, *Evolution of Statesmanship*, *supra* note 71 at 16.

<sup>78</sup> In a note on the work of Thorstein Veblen, Howard Scott intended to respond to some questions regarding the credit owed to the famous author: "[t]here has been much discussion concerning the origin of the body of ideas for which the term Technocracy now stands. Speculation concerning this point has focused attention upon the work of Thorstein Veblen as the source of inspiration, with particular reference to the "Engineers and the Price System" as the animating force. Such conclusions are quite contrary to the facts." See Scott, *Introduction to Technocracy*, *supra* note 63 at 59. According to Scott, the two men were simply caught in the same drift of "modern common sense" (*ibid* at 60). See Howard P Segal, *Technological Utopianism in American Culture* (Chicago: University of Chicago Press, 1985) at 122.

<sup>79</sup> Klint Finley, "Techies Have Been Trying to Replace Politicians for Decades," *Wired* (6 May 2015), online: <[www.wired.com/2015/06/technocracy-inc/](http://www.wired.com/2015/06/technocracy-inc/)>.

<sup>80</sup> Veblen's lexicon is omnipotent in the Technocracy material. See TechnocracyNow, "Technocracy: Howard Scott 1958 Q&A Detroit" (19 October 2011), online (video): *YouTube* <[www.youtube.com/watch?v=tTjzyUO5rq8](http://www.youtube.com/watch?v=tTjzyUO5rq8)>.

<sup>81</sup> Scott remained the chief-engineer of Technocracy Incorporated until his death in 1970. The movement, however, rapidly lost traction for several reasons, some being attributed to Scott himself who was seen by many as a shady character. His intellectual honesty was often challenged and never really cleared. The movement also had to defend itself against accusations of being fascists or communists. Technocracy flirted dangerously with radical ideas, members were seen wearing brown uniforms at rallies, but ultimately offered little solutions to the problems they had identified. See Elsner, *The Technocrats*, *supra* note 41 (noting "Technocracy proposes no solution, it merely poses the problem raised by the technological introduction of energy factors in a modern industrial social mechanism" at 42).

<sup>82</sup> London, *New Prosperity*, *supra* note 12 at 5.

While London envisioned a state-led planned obsolescence, the current debate concerns corporate-controlled and engineered obsolescence. Manufacturers are accused of implementing techniques to deliberately reduce the life of a product to increase the replacement rate. While such strategies follow the dictate of stimulating consumption to meet production levels and sustain the economy, many of the problematic dynamics identified by London, Veblen and the Technocrats remain: the lifecycle, use, and replacement of consumable goods are pieces of the economy left in the hands of the owners of the production means, driven by profits and who, arguably, do so to the detriment of collective interests whether they are workers' rights, consumers' rights or the protection of the environment. While London did not openly attack profit-seeking business strategies, his view of a new economy intrinsically draws on corporate social responsibility:

Such a socially responsible system, which is anxious for the wellbeing of all of its citizens, is on a vastly sounder and more permanent basis than one which allows business merely to take out profits without improving the organization with new methods and without renewing the equipment. I maintain that with wealth should go responsibility. Too many nowadays regard wealth as license to freedom and immunity from obligation to the people. Such irresponsible possessors of wealth are shirkers, who tend to make all of us poorer.<sup>83</sup>

It is difficult to speculate on what London would have thought of obsolescence as a commercial strategy to maximize profit. Today, planned obsolescence remains a historical curiosity when its quasi homonym, programmed obsolescence, is on trial. The next section draws our attention to the issue of manufacturers and designers' liability. Stories about manipulation of consumers and abusive control over the product are told, but the culprits are yet to be found.

## II—Stories of Programmed Obsolescence

Stories of programmed obsolescence are sites to observe its manifestations. They are an invitation to reflect on the need and limits of legal interventions. This section presents two cases that have grasped the attention of the law. The first one is often presented, wrongly as it happens, as the poster child of programmed obsolescence. It concerns the Phoebus Cartel, an alliance of manufacturers that controlled the output and distribution of light bulbs and, incidentally, tampered with the durability of light bulbs to reduce their lifespan (A). The second one is not known as an instance of obsolescence. Its inclusion is perhaps less obvious. However, it imposed itself as our research progressed. It concerns the Y2K episode, the programming code limitations that made the year 2000 a daunting event for consumers (B). Instances of programmed obsolescence tell stories about science, progress, and the disruptive effects of technological changes. Strategies aimed at forcing the replacement of goods would be,

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<sup>83</sup> London, *Ending the Depression*, *supra* note 9 at 19. See London, *New Prosperity*, *supra* note 12 (noting “I outline the fundamentals of a new economic policy which would translate into terms of improved welfare for the average citizen. In the new prosperity, good business will become identical with good sociology” at 6).

in Veblenian terms, perfect examples of “sabotage,” a term he broadly defines as any measures of restraint or incitement deployed to consolidate control over production and maintain profitable prices.<sup>84</sup> But as these two cases demonstrate, in Veblen’s words, “sabotage commonly works within the law, although it may often be within the letter rather than the spirit of the law.”<sup>85</sup>

## A—The Light Bulb Affair

### 1—General Electric and the Phoebus Cartel

In the 1920s, an international alliance of powerful light bulb manufacturers was formed. Aimed at controlling the light bulb industry, it became an organized standardization model that imposed technical limitations to the life of the incandescent lamps produced by its members in America and in Europe. This large-scale strategy became with time the very fact and face of programmed obsolescence in documentaries, organization reports, and parliamentary debates.<sup>86</sup> Above all, the light bulb affair was a series of anti-trust cases in the United States directed at General Electric (GE) questioning the dominant position it held for decades as a result of its pioneer patents. These actions were a governmental response to giant corporations and strategies used by them to control the market<sup>87</sup>. All the cases relate in some way to the use- or misuse - of patents held by GE and contractual techniques developed by it in order to control the light bulb industry and prices. Here, in the background of an anti-trust case, programmed obsolescence met with intellectual property.

The light bulb affair is unique in several respects. The anti-trust cases had an unprecedented and extensive evidentiary record that included reports and letters

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<sup>84</sup> Veblen, *The Engineers and the Price System*, *supra* note 37 (more specifically, Veblen addresses the withdrawal of efficiency to avoid overproduction and the risk of price deflation at 16). For Veblen, sabotage techniques are, in general, within the law and correspond to a form of legal astuteness. See *ibid*:

All that can be said here is that many of these wise measures of restraint and incitement are in the nature of sabotage, and that in effect they habitually, though not invariably, inure to the benefit of certain vested interests—ordinarily vested interests which bulk large in the ownership and control of the nation’s resources. That these measures are quite legitimate and presumably salutary, therefore, goes without saying. In effect they are measures for hindering traffic and industry at one point or another, which may often be a wise business precaution.

<sup>85</sup> *Ibid* at 6. Veblen reckons that many of the tactics that fit his definition of sabotage “are deliberately sanctioned by statute and common law and by the public conscience” (*ibid* at 7).

<sup>86</sup> See Markus Krajewski, “The Great Lightbulb Conspiracy” (2014) 51:10 IEEE Spectrum 56 [Krajewski, “Lightbulb Conspiracy”]; Cosima Dannoritzer et al, *The Lightbulb Conspiracy: The Untold Story of Planned Obsolescence*, 2010, DVD (San Francisco: Arte France, 2010); George W Stocking & Myron W Watkins, *Cartels in Action: Case Studies in International Business Diplomacy* (New York: The Twentieth Century Fund, 1946); Arthur A Bright Jr, *The Electric-Lamp Industry: Technological Change and Economic Development from 1800 to 1947* (New York: MacMillan Company, 1949).

<sup>87</sup> *United States v General Electric Co*, 272 US 476 (1926) [GE 1926]; *United States v General Electric Co*, Civil Action 1364, 82 F Supp 753 (DNJ 1949) [GE 1949], supplemented by 115 F Supp 835 (DNJ 1953) [GE 1953]; *United States v General Electric Company*, 303 F Supp 1121 (SDNY 1969).

between high officials and engineers containing clear instructions as to product design and profit estimates. The nature of the litigation, an anti-trust investigation, is also essential to understand these cases. The investigation enabled the discovery of such evidence and, more importantly, reflects the willingness of state authorities to inquire into business strategies and assume a role in the planning of economic operations. Two decisions are of particular interest for this paper. The first case, *United States v General Electric Co*,<sup>88</sup> was commenced by a complaint lodged by the American government for price fixing. The judgment, rendered in 1926, rejected the accusations and has been widely interpreted as confirming the right of a patentholder to extract competitive advantages from the exercise of its intellectual property rights to the full extent allowed by law. According to the Court, “comprehensiveness of his control of the business of selling is not necessarily an evidence of illegality in method.”<sup>89</sup> The case points to the role of patents in the modernization of distribution techniques and emphasizes, moreover, the functional limits and properties of a good as determined by the intellectual property owner. The owner is the “supreme agenda setter for the resource.”<sup>90</sup> The 1926 case, however, did not raise the issue of programmed obsolescence.

The second case, *United States v General Electric Co*,<sup>91</sup> was decided in 1949. It contains important background information and evidence showing how an entity, in a dominant position, can unilaterally assign properties it deems profitable to a line of products, including its durability. This 1949 anti-trust case was about collusion, not price fixing.<sup>92</sup> It shows how effective the arrangements and international licenses put in place by GE were. They prevented foreign competition and secured GE domination over the lamp industry in the United States. Evidence filed by the litigants show that GE’s average percentage of the total of all lamps sold during the period when the arrangements were in force was 55%, which amounted to an average of 82.2% when combined with Westinghouse, GE’s cross-licensee, and other licensees.<sup>93</sup> GE and its licensees thus formed, in the words of Judge Forman, “an almost impregnable front to those manufacturers not part of their combination.”<sup>94</sup> The Court found GE in violation

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<sup>88</sup> *GE* 1926.

<sup>89</sup> *Ibid* at 485.

<sup>90</sup> Larissa Katz, “Exclusion and Exclusivity in Property Law” (2008) 58 UTLJ 275 at 278.

<sup>91</sup> *GE* 1949, *supra* note 87 supplemented by *GE* 1953, *supra* note 87.

<sup>92</sup> The Great Depression of the 1930s, however, saw drastic changes in public perception regarding such patent-based cartels due, in part, to the failure of the cartel-friendly National Recovery Administration to restore prosperity. Electric lamp cartels were not spared by a wave of anti-trust investigations. Already under surveillance, the US government took action in 1941 and filed a complaint against GE under allegations that the company had used the Convention of 1924 and domestic licenses to further its lamp monopoly and restrain trade and competition in the United State. See FM Scherer, “The Role of Patents in Two US Monopolization Cases” (2005) 12:3 Intl J Economics Business 297 at 299.

<sup>93</sup> *GE* 1949, *supra* note 87 at 893 (Exhibits 21-G, GE-237 and GE-238).

<sup>94</sup> *Ibid* at 893.



of section 2 of the *Sherman Anti-Trust Act* and ruled that its licensees conspired to further the monopoly.<sup>95</sup> It concluded,

[b]y virtue of General Electric's dominating position in the industry and relative lack of competition it had the power to set the standard of efficiency of incandescent electric lamps for the entire industry and in so doing to determine what should be their length of life, and this constitutes an attribute of monopoly.<sup>96</sup>

The story begins in the early 20th century. The electric lamp industry was booming due to the rapid spread of electrification and the introduction of new forms of lighting.<sup>97</sup> Weaving a web of cross-licensing agreements, leading lamp manufacturers in industrial countries stabilized and monopolized domestic markets by eliminating competition.<sup>98</sup> In the United States, GE consolidated control over the industry by first enjoying the benefits of pioneer patents it had acquired, then by investing heavily in machinery and expanding its portfolio of related innovations and patents. It implemented licensing and distribution schemes to share commercial routes and markets, forging alliances between light bulb makers.<sup>99</sup> After World War I, leading lamp manufacturers around the world increasingly entered international licensing agreements which led to the formation of the Phoebus Cartel.<sup>100</sup> In 1924, representatives from the leading light bulb manufacturers in Europe and America met in Zurich, Switzerland, to sign the *Convention for the Development and Progress of the International Incandescent Electric-Lamp Industry*.<sup>101</sup> The stated objectives were to “ensure and maintain a uniformly high quality [of lamps], increase the effectiveness of electric lights, and ... increase light use to the advantage of the consumer.”<sup>102</sup> The Cartel's leading members included Osram (Germany), Philips (Netherlands), Tungsram (Hungary), Associated Electrical Industries (United Kingdom) and Compagnie des lampes (France).<sup>103</sup> Together, they incorporated and held shares in a Swiss-based company named Phoebus Inc Industrial Company for the Development of Lighting. The American company GE never joined the international cartel as an

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<sup>95</sup> *Ibid* at 902.

<sup>96</sup> *Ibid* at 899.

<sup>97</sup> Krajewski, “Lightbulb Conspiracy”, *supra* note 86 at 58.

<sup>98</sup> Stocking & Watkins, *supra* note 86 at 313–23.

<sup>99</sup> *Ibid* at 306–309.

<sup>100</sup> *Ibid* at 304 and 321.

<sup>101</sup> *Ibid* at 331–32; Krajewski, “Lightbulb Conspiracy”, *supra* note 86 at 57. A copy of the agreement is reproduced in part at Appendix 8 of UK, The Monopolies and Restrictive Practices Commission, *Report on the Supply of Electric Lamps* (London: Her Majesty's Stationery Office, 1953) at 126–51 [UK Report on the Supply of Electric Lamps].

<sup>102</sup> *Ibid* at 353 (citing the *Convention for the Development and Progress of the International Incandescent Electric Lamp*).

<sup>103</sup> *Ibid* at 332; Markus Krajewski, “Vom Krieg des Lichtes zur Geschichte von Glühlampenkartellen” in Peter Berz, Helmut Höge & Markus Krajewski, eds, *Das Glühbirnenbuch* (Vienna: Edition Selene, 2001) at 184 [Krajewski, “Krieg des Lichtes”].

official member, but nevertheless played a central role in its formation and operations.<sup>104</sup> While the Convention was expected to end in 1955, it became void with the outbreak of World War II.<sup>105</sup>

Programmed obsolescence was not the immediate cause of action in the 1949 litigation case. Collusion was. However, the court's examination of anti-competitive practices brought to light the conditions under which programmed obsolescence can be implemented. The case also provides unprecedented evidence to the effect that engineers had been instructed to reduce the durability of certain products. The injunction order, granted in the 1953 supplementary decision from the same court, enjoins GE from combining and conspiring, among other things, to "reduce, restrict, or limit, in any manner, the kinds, quantities, sizes, styles, or qualities of lamps, lamp parts, or lamp machinery which may be manufactured by any person."<sup>106</sup>

The cases thus exemplify how programmed obsolescence thrives in a monopolistic environment in which consumers, who cannot readily access more competitive alternatives, are forced to accept the durability standards set by those who control the market. Indeed, the 1924 *Convention* provided for the implementation of a standardization program under which the parties agreed to a "formulae for arriving at the economic life of lamps."<sup>107</sup> Accordingly, all members had to send samples to a testing laboratory in Switzerland where the life of the light bulbs was meticulously recorded.<sup>108</sup> Members that deviated from the optimal range determined by the cartel were fined.<sup>109</sup> In the United States, the Electrical Testing Laboratories (ETL) was key in implementing a parallel standardization program. Although GE claimed the ETL was independent, the court found that ETL was not only substantially financed by the defendant company, it also had enforced its own standards and obtained information, including of a confidential nature, on its competitors.<sup>110</sup>

Absent effective competition, GE was able to dictate the norms and conditions governing the sale and use of its products, even if it did so at the consumers' expense. It controlled the science, the market, and the message through aggressive marketing. As a result, the American consumers were left with little choice and

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<sup>104</sup> Krajewski, "Lightbulb Conspiracy", *supra* note 86 at 59; Stocking & Watkins, *supra* note 86 at 321–22. By December 31, 1940, General Electric had the following percentages of ownership in its licensees: 21.45% in Osram; 11.85% in Philips; 37.03% of ordinary shares and 33.47% of founding shares in Compagnie des lampes; and 40.66% of ordinary shares and 20.72% of preferred shares in Associated Electrical Industries.

<sup>105</sup> Krajewski, "Lightbulb Conspiracy", *supra* note 86 at 61.

<sup>106</sup> *GE 1953*, *supra* note 87 at 860.

<sup>107</sup> *GE 1949*, *supra* note 87 at 835 (documentary evidence, reply from Mr. Woodward, a European representative of International GE, a fully owned subsidiary of GE); Stocking & Watkins, *supra* note 86 at 354.

<sup>108</sup> Stocking & Watkins, *supra* note 86 at 353.

<sup>109</sup> *Ibid* at 353–54.

<sup>110</sup> *GE 1949*, *supra* note 87 at 854.

purchasing power to offset corporate strategies aimed at maximizing profit and stock turnover. However, the court's assessment of anti-trust violations in the 1949 case opened a space to discuss the "deterioration of products" as an attribute of a monopoly. In light of GE's experiments to limit the lifespan of light bulbs, the Court concluded that "the total proof leads to the conclusion that by virtue of General Electric's dominating position in the industry and relative lack of competition it had the power to set the standard of efficiency of incandescent electric lamps for the entire industry and, in doing so, to determine what should be their length of life, and this constitutes an attribute of monopoly."<sup>111</sup> These conclusions are compelling even if evidence documenting engineering efforts to set standards of efficiency, or shorten the lifespan of a product, were only accessory to the anti-trust action. It undoubtedly paved the way to the current narrative on obsolescence.

## 2—Evidence of Programmed Obsolescence

If programmed obsolescence was only peripheral to the conspiracy accusations, it was nevertheless a central piece to the US government's argument that the monopoly created a situation whereby American consumers were clearly on the losing side, hence adding gravitas to the complaint. A series of letters, reports and memoranda between engineers of the Lamp Department and officials holding key positions in GE left a detailed record of the engineering efforts spent on altering the quality and lifespan of light bulbs, the intended objectives, and the actual achievements.<sup>112</sup> As for the issue of the deterioration of products, the Court took a piecemeal approach to the technical and economic considerations involved in design and manufacturing decisions. The reasoning is punctuated by short references to the expertise submitted and a dose of value judgement. While the final determination pertained to GE's power to set the standards of the light bulb industry, the Court noted that

[d]espite assertions of good faith, sound business discretion, great technical research, and consideration for the interest of the consuming public, there was manifested in the two situations [flashlight bulbs and Christmas tree lamps] a paramount concern in what would afford the maximum return in profits to the manufacturer and that General Electric had the power in the instance of the flashlight lamp, to shorten the life of the lamp, and in the instance of the Christmas tree lamp, at least, to promote a product with a short life for a specific use over one that had four times its life.<sup>113</sup>

While it acknowledged that GE could lawfully seek to maximize its profits, the Court put a negative ring to the GE's efforts to shorten the lifespan of bulbs and to do so with

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<sup>111</sup> *Ibid* at 899.

<sup>112</sup> *Ibid*. In an attempt to minimize the effect of these documents, GE claimed, unsuccessfully, that the correspondence amounted to "nothing more than the personal views of the particular individuals concerned" (*ibid* at 844).

<sup>113</sup> *Ibid* at 899.

the primary aim of maximizing its profits to the detriment of the consumers' interests.<sup>114</sup>

The US government brought deterioration claims for three products: flashlight bulbs, miniature lamps, and tantalum lamps. While the claim for tantalum lamps was barely discussed and dismissed, the strategies implemented in the case of flashlight bulbs and miniature lamps came under scrutiny. In the case of flashlight bulbs, the evidence revealed that GE had successfully reduced their longevity from a life coextensive with three batteries in the 1920s to one of two batteries by the 1930s. In 1932, the engineering department studied the possibility of further reducing the life of flashlight light bulbs to only outlast one battery. Their report was the basis of an inter-departmental letter to the executives of GE, stating

[t]wo or three years ago we proposed a reduction in the life of flashlight lamps from the old basis on which one lamp was supposed to outlast three batteries, to a point where the life of the lamp and the life of the battery under service conditions would be approximately equal. Sometime ago, the battery manufacturers went part way with us on this and accepted lamps of two battery lives instead of three. We have been continuing our studies and efforts to bring about the use of one battery life lamps... If this were done, we estimate that it would result in increasing our flashlight business approximately 60 per cent.<sup>115</sup>

According to the US government, GE “was primarily interested not in giving the consumer more efficient light but basically in increasing its sales of flashlight lamps.”<sup>116</sup> GE’s first line of defence was efficiency. Efficiency, which it defined as “the amount of light that the lamp will give for the amount of electricity it consumes,”<sup>117</sup> was a “more important consideration” in measuring the quality of a lamp than its lifespan.<sup>118</sup> Relying on the efficiency gains of shorter-lived bulbs, GE argued

[t]he main purpose of the change in the life of the lamp was to lower the total costs of light to a flashlight user by making the design life of lamps then in use shorter so as to cause them to give more light, and that, incidentally, it was estimated that its sales of flashlight lamps would be increased about 60%.<sup>119</sup>

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<sup>114</sup> *Ibid* at 899.

<sup>115</sup> *Ibid* at 897.

<sup>116</sup> *Ibid* at 897.

<sup>117</sup> Measured in lumens per watt.

<sup>118</sup> *GE 1949, supra* note 87 at 897 (R 2162, testimony of Mr. Harrison).

<sup>119</sup> *Ibid* at 897. A closer look at how an incandescent electric light operates helps understand the efficiency claims raised by GE. When an electric current flows through the filament of the bulb, the filament offers resistance. The electrical energy absorbed by it is then dissipated by the emission of heat and light. The efficiency of a filament depends on its diameter and length. A filament shorter in diameter and length can operate at a higher temperature and will produce more light output (units of luminous flux or lumens) per unit of current used (watt). Running at higher temperature, however, causes the metal of which the filament is made of, tungsten in this case, to evaporate faster. The result is a more efficient bulb with a shorter life.

Another claim concerned miniature lamps. In 1936 and 1937, GE manufactured a C-7 night lamp and a C-7-½ Xmas Tree lamp designed for a life of 2000 hours and 500 hours respectively. In a memorandum to the managers and salesmen issued in 1937, the Incandescent Lamp Department opposed a plan by the agents in charge of the wholesaling operations (“B agents”) to order the longer lived C-7 light lamps instead of shorter lived C-7-½ Xmas Tree lamps to be used in Christmas tree sets.<sup>120</sup> The Government contended that GE opposed the substitution because it was concerned with loss of sales of the Xmas Tree lamps and feared the opposition of the manufacturers of that string of lamps.<sup>121</sup> GE argued that it emphasized the sale of the C-7-½ Xmas Tree lamps for Christmas tree sets for “technical reasons” that were in the consumers’ interests. Both models were of similar size and shape and the C-7 light lamp could fit into the socket of the Xmas Tree lamp. However, GE claimed that the Xmas Tree lamp had a shorter design life to provide a more brilliant light. It argued that the compromise between efficiency and longevity was determined in accordance with the purpose of the product, that is, provide “the sparkle and brilliance of particular interest to Christmas tree decorations” and a “rugged construction to meet the rougher handling to which the Christmas tree lamp was exposed.”<sup>122</sup> In contrast, the C-7 night lamp was designed to “throw a spot of dim light for use in hallways, nurseries” and would give “unsatisfactory service if used for Christmas tree purpose.”<sup>123</sup> The Court did not assess these claims, but emphasized that GE had the power “at least, to promote a product with a short life for a specific use over one that had four times its life.”<sup>124</sup>

On the whole, the Court considered the strategy to reduce the lifespan of products or promote shorter-lived options as part of a larger pattern of conduct in determining anti-trust violations. The two lines of defence brought forward by GE were not fully assessed nor rebutted. On the one hand, the Court recognized the trade-off between the longevity and efficiency of a bulb but seemed to imply that the

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Assuming the wattage remained the same, a reduction in the lifespan of flashlight bulbs would bring an increase in lumens per watt, which means that the lamp is brighter and produces more light for the electricity consumed. See the Subcommittee’s Preliminary Study, cited in US, Government Activities Subcommittee of the Committee on Government Operations, 29th Cong, *The Short Life of the Electric Light Bulb* (Washington, DC: United States Government Printing Office, 1966) [Subcommittee Report]. The second part of the argument, that a shorter-lived bulb would lower the total costs of light to a flashlight user, has a reasonable basis although it is not discussed in the court decision. The argument is that from the power of one battery, a consumer would get more light output (lumens) from a flashlight that uses a shorter-lived, more efficient bulb than from a longer-lived, less efficient bulb. Simply put, the consumer gets more light per battery even if he needs to replace the bulb more frequently. Since it was demonstrated that GE had the power, and did, shorten the lifespan of the flashlight bulbs, the court did not assess these claims and, instead, pointed to evidence that lamps were burning out before the battery was fully consumed and that there was no price difference between the two models (*GE 1949, supra* note 87 at 879).

<sup>120</sup> *GE 1949, supra* note 87 (exhibit 1867-G, a memorandum dated 30 July 1937, from the Incandescent Lamp Department to managers and salesmen).

<sup>121</sup> *Ibid* at 897.

<sup>122</sup> *Ibid* at 898.

<sup>123</sup> *Ibid* at 898.

<sup>124</sup> *Ibid* at 899.

compromise reached was inadequate. On the other hand, references to the consumers' interests remain abstract without evidence of the actual power, light output and lifespan of the products, making it impossible to know, for instance, whether a shorter-lived flashlight battery produced more light for the electricity consumed or whether rugged lights were actually more resistant to shocks. It will take the intervention of state authorities, acting outside of the litigation context, to elucidate the issue of the lifespan of light bulbs.

### 3—*State Authorities and Product Lifespan*

In the years following the injunction, incandescent light bulbs continued to last between 750 to 1,000 hours according to a preliminary study prepared by the Government Activities Subcommittee of the Committee on Government Operations (hereinafter, "Subcommittee") in 1964.<sup>125</sup> In the context of a rulemaking proceeding in 1966, the Subcommittee decided to investigate the feasibility of extending the lives of standard bulbs.<sup>126</sup> While the Court concluded in 1949 that it was unreasonable to infer, in light of the evidence, that GE could have delivered 60 watt gas-filled tungsten lamps with a better efficiency rating in lumens per watt, the Subcommittee was not limited to assessing violations of anti-trust laws. Therefore, it evaluated the technical considerations involved in design decisions and their effects on the consumers' interests. Its findings severely challenged light bulb manufacturers' design decisions.

Regarding GE's efficiency defence, the Subcommittee recognized the "inevitable compromise" between light output and the life expectancy of an incandescent electric bulb.<sup>127</sup> In light of the preliminary report and manufacturers' responses, the Subcommittee concluded, however, that the compromise reached was inadequate because losses in terms of lifespan would only bring small gains in lumen output. At a same wattage, the life expectancy of a bulb is inversely proportional to about a seventh of the power of the light output.<sup>128</sup> This means, roughly, that a 10 percent decrease in light output could double the life of a bulb.<sup>129</sup> Compared to white-finished 100-watt bulbs manufactured by Sylvania that had life ratings of 1,100 hours and an initial light output of 1,580 lumens, the standard 100-watt bulb manufactured by GE was designed to last 750 hours and had an initial light output of 1,710 lumens.<sup>130</sup> For 350 hours less, a consumer gained 130 lumens, an amount not visible to the naked eye.<sup>131</sup> The Subcommittee concluded that light output should not be emphasized as the

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<sup>125</sup> Subcommittee Report, *supra* note 119 at 27.

<sup>126</sup> *Ibid.*

<sup>127</sup> *Ibid* at 28.

<sup>128</sup> *Ibid* at 6.

<sup>129</sup> *Ibid* at 7, 49 and 69.

<sup>130</sup> *Ibid.*

<sup>131</sup> *Ibid* at 4.

true measure of the bulb's efficiency to the detriment of life expectancy.<sup>132</sup> The gains in "brightness" that GE had put forward to justify shortening the lifespan of the flashlight bulbs in the 1949 anti-trust case were probably only minimal. Hypothetically, a reduction in the lifespan of flashlight bulbs from three to a two battery life, which represents a 1/3 decrease, would have an increase in light output of approximately only 5.9%.<sup>133</sup>

In addition to the trade-off between efficiency and longevity, efficient light bulb design needs to strike a balance between light output, life expectancy, and electric power consumption. To increase the light output and life expectancy of a bulb without compromising one or the other, the bulb needs a higher wattage, which also means, consequently, that it will use more electric current.<sup>134</sup> The resulting increase in electric costs, according to GE, would mostly affect low-income customers.<sup>135</sup> The underlying idea of GE's argument is that the company calculates the optimum bulb life with the objective of providing lighting, as distinct from lamps, at lower costs.<sup>136</sup> This line of defence highlights how two markets, light bulb manufacturing and electric production, intersect within one product. Since the bulb is a device through which a service is delivered, GE commented that "[i]t is the responsibility of the lamp design engineer to build into the product the best over-all value for the average conditions of use."<sup>137</sup> Based on its estimates of the costs of the bulb and electric power costs, the Subcommittee, however, found that light bulb manufacturers failed to fulfil their responsibility. The Subcommittee concluded that doubling the lives of the higher wattage bulbs would cost the consumers an additional amount "so small that it can stand as no justification for the extreme limitation the bulb manufacturers have placed upon light bulb life over the past two decades."<sup>138</sup>

Finally, the Subcommittee did not determine whether the reduction of the lifespan of bulbs was reasonable at the time of the cartel but reasoned that the 1,000 hour shelf life was no longer justified at the time when the Subcommittee's report was issued in 1966.<sup>139</sup> While shorter-lived bulbs have been more economical for the consumer in the 1910s, when the costs of electric current were high and lamps needed to withstand voltage fluctuations, they did not remain optimum as the electric rates

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<sup>132</sup> *Ibid* at 2.

<sup>133</sup> Assuming a *b* exponent of 7.

<sup>134</sup> Subcommittee Report, *supra* note 119 at 1, 28.

<sup>135</sup> *Ibid* at 52. In its Commentary submitted to the Subcommittee, GE argued that it had not increased the shelf life of its light bulbs beyond the 1,000-hour standard, because any substantial change in design to increase life expectancy while conserving present level of light output would add \$100 million to the American consumers' electric bill (*ibid* at 53).

<sup>136</sup> *Ibid* at 57.

<sup>137</sup> *Ibid* at 59.

<sup>138</sup> *Ibid* at 25 (noting that "the life of a 100-watt standard bulb could be doubled—that is, extended to 1,500 hours—for an increase in light costs to the consumer of 2.5 percent [per year]" at 15).

<sup>139</sup> *Ibid* at 1.

declined.<sup>140</sup> Changes in the ecosystem of a product, whether it is the costs of services or the development of new technologies, make it difficult to determine when the end of life of a product is no longer reasonable and becomes premature. Moreover, it remains unclear whether the failure was programmed or whether it was a state of affairs that remained unchanged. As the Subcommittee conceded,

[t]he reasonableness of extending bulb life at a minimal and even unmeasurable annual cost is a matter of judgement... It is the considered conclusion of this subcommittee, however, that the double-life bulbs would be well worth this minimal cost. And, it is our opinion that the overwhelming majority of consumers agree.<sup>141</sup>

As highlighted in the course of the anti-trust investigation, by monopolizing the market, GE was in a position to limit the useful life of their products and control the information disclosed to the consumers, thus limiting of their freedom of choice.<sup>142</sup>

Beyond the inconvenience of frequent replacement and consumer dissatisfaction, the Subcommittee highlighted a lack of information on the product's characteristics. It found that some statements made by the manufacturers were misleading since they inferred that efficiency of the rate at which a bulb generates light, as in lumens per watt, was the sole factor of the bulb's economy to the consumer.<sup>143</sup> In its statements before the Federal Trade Commission, which was presented to the Subcommittee, GE responded that they had, in the past, experienced "great difficulty in explaining [the] technical story" of the balance between life and light and that "more complex statements than these would only serve to confuse [the consumers] rather than clarify."<sup>144</sup> It was, GE argued, in the consumers' best interests to disclose on the packaging of light bulbs the wattage only, and not the lumens and hours of useful life as the Subcommittee recommended in its preliminary study. While the report reflects extensive investigation, cost calculations, and comparisons of light bulbs from different manufacturers, the Subcommittee did not purport to determine the optimal lifespan and focused instead on demonstrating that light bulbs could be

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<sup>140</sup> Bright, *supra* note 86 at 332–33, 361, cited in Subcommittee Report, *supra* note 119 at 25. Electric rates have declined by more than 60 percent between 1910 and 1946 due, in part, to improvement in generating and transmission equipment with the collaboration of General Electric, Westinghouse, and other large producers of heavy electrical apparatus (Bright, *supra* note 86 at 361).

<sup>141</sup> Subcommittee Report, *supra* note 119 at 17.

<sup>142</sup> See *ibid* at 25, citing Bright, *supra* note 86 at 333, explaining that the problem lies in the fact that

it ha[d] been impossible for consumers to prevail on General Electric to add long-lived lamps to its standard line so that the purchaser may select for himself the type he wants. This insistence by the industry leader that it knew best what its customers needed has in individual instances proved costly to them, for what General Electric made standards was virtually forced on 90 percent of the domestic market. Consumers have not had the freedom of choice with respect to burning hours to which they would seem to be entitled).

<sup>143</sup> Subcommittee Report, *supra* note 119 at 2–5.

<sup>144</sup> *Ibid* at 65 (Statement Before Federal Trade Commission by Donald D Scarft, General Manager, Lamp Division, General Electric Co).



longer-lasting. Ultimately, they relied on consumer knowledge. In 1970, their recommendation became a trade regulation rule providing that

it constitutes an unfair method of competition and an unfair and deceptive act or practice to: (a) Fail to disclose clearly and conspicuously the following information for such lamps on the sleeves or paper containers in which they are packaged: (1) The electrical power consumed-expressed in average initial wattage; (2) The light output expressed in average initial lumens; (3) The average laboratory life expressed in hours.<sup>145</sup>

Information would ensure that consumers had the freedom to make well-informed purchases in light of their needs, means and competing products. As we will see, current initiatives to prevent and sanction programmed obsolescence tend to rely on obligations of information as the main weapon.

Yet, even prior to legislative action, such control over product information and life span had increasingly proven difficult to maintain as GE's monopoly was weakening. GE faced increasing competition during the Great Depression from lamp producers, within and outside the Cartel, that started the manufacturing of longer lasting lamps.<sup>146</sup> An official of GE suggested reconsidering their strategy, explaining, "[competitors'] lamps are at somewhat lower efficiency than ours and inherently have a longer life. It is difficult to convince the typical consumer that efficiency of the lamp is the important thing. He is prone to judge quality by life alone."<sup>147</sup> Competition, it seems, may be a cure to programmed obsolescence after all.

The Phoebus Cartel affair stands today as an example of the type of sabotage techniques leaders can deploy. In many respects, however, it is an exceptional and singular case from which it is difficult to extrapolate. First, it did not address the legality of programmed obsolescence. It must be recalled that the creation and implementation of the GE-Phoebus cartel's standardization program was only put forward in support of the anti-trust case. Secondly, the scope of the evidence was such that it caught in its net the elements relevant to our story. It serves our purpose only inasmuch as it is a reconstructed narrative. It gives us a unique opportunity to explore the constitutive elements of programmed obsolescence, namely: the practice, which is the deliberate shortening of a product lifespan; the goal, which is the increase of repetitive consumption of the product of a same entity or group to generate profits; and a lack of transparency in the information disclosed to the consumers.<sup>148</sup> Together, these three elements emerged out of the corporate records to haunt GE in the courtroom where competition laws provided space to examine a strategy to reduce the

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<sup>145</sup> 35 Fed Reg 11767 (1970) (to be codified at CFR § 409.1) at 11784–91.

<sup>146</sup> Stocking & Watkins, *supra* note 86 at 355.

<sup>147</sup> Stocking & Watkins, *supra* note 86 at 356 (Ex 1862-G, letter from RG Morison and AL Powell to HB Myrtle, 19 May 1933).

<sup>148</sup> Slade, *supra* note 10 at 80–81.

durability of its products.<sup>149</sup> Absent such prevailing and intrusive proceedings, which singularize anti-trust prosecutions in the United States, evidence of the same nature and scope would be particularly difficult to find. In fact, a British Report of 1951 examining the supply of electric lamps and inquiring into the same matters, concluded that

[a]s regards life standards, before the Phoebus Agreement and to this day the general service filament lamp was and is designed to have, on average, a minimum life of 1,000 hours. It has often been alleged—though not in evidence to us—that the Phoebus organisation artificially made the life of a lamp short with the object of increasing the number of lamps sold. As we have explained in Chapter 9, there can be no absolute right life for many varying circumstances to be found among consumers in any given country, so that standard life must always represent a compromise between conflicting factors.<sup>150</sup>

Nowadays, the GE case continues to be discussed and presented as a programmed obsolescence case which, as we have shown, is not entirely accurate. Nevertheless, the light bulb affair remains a key chapter in the story of programmed obsolescence as it exposes, on one hand, the level of sophistication of manufacturers when it comes to product design and, on the other hand, the information asymmetry consubstantial to the technological dimension of such design. This implies that unless programmed obsolescence is admitted or proven in the course of a litigation case in a country where extensive discovery is possible or when it is simply presented as a legitimate business method—that is, the manufacturing of disposable products offered at lower prices—only reverse engineering can have the object speak: *res ipsa loquitur*. The GE case's main contribution was to bring within the realm of provable possibility the deliberate attempts by manufacturers to reduce product durability, attempts which otherwise would remain in the world of conspiracy theories. In doing so, it called for a more inquisitive approach to the physical limitations of mass market products. Even so, while extensive evidence was uncovered revealing a clear intent to shorten the life of light bulbs, technical complexities and technological developments left evidence of programmed obsolescence under a dim light.

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<sup>149</sup> Similarly, the case of Dupont's nylons stockings is often cited as an example of planned obsolescence, but was, like the GE case, an anti-trust investigation. The company allegedly reduced the durability of their nylon stockings by amending the original formula. In *United States v Imperial Chemical Industries*, 100 F Supp 504 (SDNY 1951), Imperial Chemical Industries Ltd, E I du Pont de Nemours and Company Inc and Remington Arms Company, Inc were prosecuted under s 4 of the *Sherman Act*. Like General Electric, Dupont and affiliated textile manufacturers monopolized the nylon industry using contract and intellectual property devices to fix durability standards.

<sup>150</sup> UK Report on the Supply of Electric Lamps, *supra* note 101 at 98.

## B—Y2K Period

Moving ahead, the Year 2000 problem, also known as Y2K or the Millennium bug, tells perhaps another story of programmed obsolescence.<sup>151</sup> In the realm of intangibles, coded objects and the Internet of things, programmed obsolescence may well be ubiquitous. The integration of chips and electronic components ties the use and utility of physical objects to the performance and functions enabled by the built-in software intelligence. The devil is in the code as much as it is in the matter. The control over product durability is thus expanded: the use of less durable material, as in the case of light bulbs, remains an option, but the embedded software constitutes another effective tool to make the object subservient and the consumer obedient.<sup>152</sup> In this environment, compatibility is another facet of obsolescence. This phenomenon is sometimes referred to as “technological obsolescence,” an expression used to describe the effects of rapid technological developments on the functionality and performance of a product.<sup>153</sup> Ultimately, both the manufacturers and the consumers may bear some responsibility for the replacement of a software-enabled product, which quickly becomes obsolete in a market flooded by new product generations with enhanced capability. The product also becomes obsolete in the eyes of its owner who decides to replace a device that is still functional.<sup>154</sup> In this case, the manufacturer can hardly be blamed for what is known as “aesthetic obsolescence”. We are far here from the situation depicted in our proposed definition of programmed obsolescence. To be sure, as the economy shifted toward an information society and products became the proxies of a service economy, obsolescence entered a new phase in which it “began to take on increasing abstract meanings.”<sup>155</sup> The obsolescence of electronic or smart objects becomes the banner of a crusade of a new genre, one that challenges the control of intellectual property owners over the physical world. This issue can be summarized as follows: since software are “works” within the meaning of copyright laws,<sup>156</sup> any

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<sup>151</sup> *American Home Assurance Company v Canadian Pacific Railway Company*, 2004 ABQB 758 [*American Home Assurance Company*].

<sup>152</sup> Slade, *supra* note 10 at 187–88.

<sup>153</sup> *Ibid.* See also Joseph Guiltinan, “Creative Destruction and Destructive Creations: Environmental Ethics and Planned Obsolescence” (2009) 89 *J Business Ethics* 19 at 19–20; Tim Cooper, “Inadequate Life? Evidence of Consumer Attitudes to Product Obsolescence” (2004) 27:4 *J Consumer Policy* 421 at 424; Brian Burns, “Re-evaluating Obsolescence and Planning for It” in Tim Cooper, ed, *Long Lasting Products: Alternatives to the Throwaway Society* (Surrey: Gower Publishing Limited, 2010) 39.

<sup>154</sup> For a discussion on the shared responsibility for the obsolescence of electronic goods, see Déméné & Marchand, “L’obsolescence des produits électroniques”, *supra* note 18 at 9–18. See also France, *Rapport du Gouvernement au Parlement sur l’obsolescence programmée, sa définition juridique et ses enjeux économiques: En application de l’article 8 de la loi du 17 mars 2014 relative à la consommation* (April 2017) (noting: “[a] business will renew more frequently its generations of products in order to propose the latest technological innovations to consumers in a competitive environment which is constantly evolving. [In the sector of IT products,] where technological developments are rapid, products are becoming more and more complex and are quickly seen as obsolete and replaced while they are still in working order” at 16 [translated by author]).

<sup>155</sup> Slade, *supra* note 10 at 187.

<sup>156</sup> This in accordance to international copyright law. See *Marrakesh Agreement Establishing the World Trade Organization*, 15 April 1994, 1867 UNTS 154, Annex 1C (Trade-Related Aspects of Intellectual Property Rights), s 10 (Computer Programs and Compilations of Data). See also, the *Canadian Copyright*

attempt to tamper with or to modify the code in-board any smart object in order to upgrade or render compatible and serviceable said object could constitute an infringement. Specific exemptions dealing with compatibility and interoperability exist but are very limited in their scope.<sup>157</sup> In other words, property, here intellectual property, gives an additional tool to control the life and use of the object, here legally, in a way that otherwise would be achieved illegally as in the GE case. Programmed obsolescence, in the literal sense, is henceforth not only possible but legitimate.

In retrospect, the Y2K episode prefigures coded obsolescence although it has never been presented in this light. On the heels of the new millennium, society found itself under an unprecedented situation: the fear that computers would be unable to record the presence of a new millennium. Several computer programs developed in the late 20th century represented four-digit years with only the final two digits. Year 1999, for instance, was entered as “99”. This two-digit date recognition code, however, also meant that year 2000 would be indistinguishable from 1900, potentially causing various errors, such as an erroneous handling of date information to the miscalculation of date-dependent data, and the crash of computers and electronic systems using this format.<sup>158</sup> Yet, as the clocks rolled over into 2000, computer failures, for those that did materialize, did not plunge society into the anticipated crisis.

Nonetheless, Y2K caught the public’s imagination and the media’s attention.<sup>159</sup> As consumers, organisations and companies sought to remedy the anticipated problem, computer programming firms, upstart computer service vendors and developers marketed remediation packages.<sup>160</sup> Fearing that “a barrage of potential litigation” would hamper efforts to fix Y2K and would dissuade individuals and business from effectively engaging in remediation efforts,<sup>161</sup> President Bill Clinton signed, in 1999, Bill HR 775, an *Act to establish certain procedures for civil actions brought for damages relating to the failure of any device or system to process or*

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*Act*, RSC 1985, c C-4 (defining “literary work” as “literary work includes tables, computer programs, and compilations of literary works”, s 2).

<sup>157</sup> See e.g. *ibid*, s 30.6 (Permitted acts) and s 30.61 (Interoperability of computer programs). Copyright laws also contain provisions dealing with what is so-called “digital locks” which aim at preventing third parties to circumvent protection measures controlling access and use of copyrighted material or software.

<sup>158</sup> US, House of Representatives, 106th Cong, *Y2K Myths and Realities: Joint Hearing before the Subcommittee on Technology of the Committee on Science and the Subcommittee on Government Management, Information, and Technology of the Committee on Government Reform* (Washington, DC: United States Government Printing Office, 1999) at 2 [Y2K Myths and Realities]; *American Home Assurance Company*, *supra* note 151 at para 6.

<sup>159</sup> Robert A Martin, “Dealing with Dates: Solutions for the Year 2000” (1997) 30:3 *Computer* 44 at 44; Eric Andrew-Gee, “Y2K: The Strange, True History of how Canada Prepared for an Apocalypse that Never Happened, but Changed Us All”, *The Globe and Mail* (28 December 2019), online: <[www.theglobeandmail.com/canada/article-y2k-20th-anniversary-how-canada-prepared/](http://www.theglobeandmail.com/canada/article-y2k-20th-anniversary-how-canada-prepared/)>.

<sup>160</sup> Dorian S Mazurkevich, “Copyright Infringement in Computer Software Repair: Fixing the Year 2000 Problem without Liability” (1999) 72:1 *Temp L Rev* 197.

<sup>161</sup> US, Committee on the Judiciary, 106th Cong, *Year 2000 Readiness And Responsibility Act Report Part I* (HR Rep No 106-131) (Washington, DC: US Government Printing Office, 1999) at 12–13 [Year 2000 Readiness And Responsibility Act Report].

otherwise deal with the transition from the year 1999 to the year 2000, also known as the *Y2K Act*.<sup>162</sup> The *Y2K Act* established specific procedures for civil actions brought for damages relating to the failure of devices or systems related to the transition from 1999 to 2000. This *Act* also recognizes an additional “upset defense” for certain defendants who, *inter alia*, “made a reasonable good faith effort to anticipate, prevent, and effectively remediate a potential Y2K failure.”<sup>163</sup> This legislative move shows, at the very least, that an entire industry was at risk and, incidentally perhaps, that the said risk was partly attributable to some form of negligence.

Y2K put programmers under scrutiny as it questioned how it was possible that programmers could ignore such a disruptive and expansive problem for more than three decades. A report prepared by the *Committee on the Judiciary*, to whom was referred Bill HR 775, defined the two-digit technology as a “innocuous short term solution to the oppressively high cost of computer memory in the 1950's and 1960's,”<sup>164</sup> acknowledging that “although programmers and managers knew in the 1950's and 1960's that they had built software with latent defects in it, no one thought that software written then would survive to the year 2000.”<sup>165</sup> For its part, the Senate Special Committee On The Year 2000 Technology Problem (Senate Special Committee) recognized the two-digit date recognition code as a “tradition” in the programming field.<sup>166</sup> Since the defect was a formatting convention that was widely followed, the legislators seemed willing to accept that programmers were not responsible for the problems that ensued. The Senate Special Committee reported that programmers simply believed that the “two-digit method of date storage would solve themselves as companies, governments and other computer-owners updated their hardware and software.”<sup>167</sup>

Across the border, in Canada, Y2K only gave rise to a few cases. As Pelletier JA summarized in the 2018 decision *Canada (AG) v Access Information Agency Inc*, which involved a dispute over supply contracts to remedy the anticipated consequences of the 1999 to 2000 transition, “the famous Y2K problem ... at the end of the day, turned out to be a non-event. After January 1, 2000 [it] had come and gone without incident ...”<sup>168</sup> Nevertheless, the Millennium bug led to the first civil action case in Canada to explicitly refer to the planned obsolescence of a device.

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<sup>162</sup> *Y2K Act*, Pub L No 106-37, 113 Stat 185 (1999).

<sup>163</sup> *Ibid* (for actions brought by a government entity, s 4(g)(3); for suspension of penalties for small businesses, s 18(d)(1)).

<sup>164</sup> US, Senate Special Committee on the Year 2000 Technology Problem, 106th Cong, *Investigating the Impact of the Year 2000 Problem* (S Rep No 106–10) (Washington, DC: 1999) at 7 [Special Committee, *Investigating the Impact of the Year 2000 Problem*].

<sup>165</sup> Year 2000 Readiness And Responsibility Act Report, *supra* note 161 at 12–13.

<sup>166</sup> See Martin, *supra* note 159 (describing the practice as the “two-digit convention” at 44).

<sup>167</sup> Special Committee, *Investigating the Impact of the Year 2000 Problem*, *supra* note 164 at 7.

<sup>168</sup> *Canada (AG) v Access Information Agency Inc*, 2018 FCA 18 at para 30.

In the 2004 decision, *American Home Assurance Company v Canadian Pacific Railway Company*, the Canadian Pacific Railway Company (CPR) brought an insurance claim for \$51,488,000 to cover the incurred costs of the Y2K remediation efforts, which included “the wholesale modification, retirement and replacement of computer systems that were identified as likely to experience problems.”<sup>169</sup> Confronted with the first Canadian property insurance claim arising out of the Y2K problem, Hawco J sought guidance from American jurisprudence. In *Port of Seattle v Lexington Ins Co*,<sup>170</sup> the insured party, like CPR, claimed indemnity against its insurers for expenses incurred upgrading its computer systems to avoid the Y2K problem. The Court of Appeals of Washington reasoned that the two-digit date recognition code was an “inherent vice,” defined as “any existing defects, diseases, decay or the inherent nature of the commodity which will cause it to deteriorate with the lapse of time.”<sup>171</sup> Two years later, the United States Federal Court of Appeals followed *Port of Seattle* and found against the plaintiff, explaining the following:

We agree. As the District Court explained, “[h]ere ... the insured property, GTE’s computer systems, do contain their own ‘seeds of destruction’—that is, the two-digit date limitation.” 258 F. Supp. 2d at 377. Furthermore, “GTE is not threatened by any external force; the threat is entirely internal.”<sup>172</sup>

Applying a similar reasoning, the Queen’s Bench of Alberta concluded that the Y2K problem was not a “faulty design or design defect,” nor “the result of an act of negligence,” but rather an “inherent vice” excluded from coverage as provided for in the insurance contract.<sup>173</sup> The Court ruled as follows:

The two-digit date recognition code was a planned and conscious design decision by the original programmers that worked well for over 25 years. The fact that the design was perpetuated due to an unwillingness to replace the system despite its obsolescence does not mean that it was a faulty design. The two-digit date recognition code was an element of programming that was initially necessary because of storage restrictions, and then became perpetuated because of the form in which data was presented and generated. The understanding of inherent vice and design defect ought not be conflated in the instant case because they are clearly two different things. Rather, the Y2K problem is more accurately understood as a planned obsolescence without taking into consideration the consequences of the decision, and is an inherent vice rather than a design defect.<sup>174</sup>

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<sup>169</sup> *American Home Assurance Company*, *supra* note 151 at paras 8, 16.

<sup>170</sup> *Port of Seattle v Lexington Ins*, 111 Wn App 901 (Wash CA 2002).

<sup>171</sup> *Ibid* at 909.

<sup>172</sup> *GTE Corp v Allendale Mut Ins Co*, 372 F 3d 598 (3d Fed Cir 2004) at 35.

<sup>173</sup> *American Home Assurance Company*, *supra* note 151 at paras 40, 46.

<sup>174</sup> *Ibid* at para 46.

As in the case of the light bulb affair, efficiency concerns and technical constraints came into play, blurring the line between willful designs and technical limitations. The two-digit date recognition code was adopted taking into account storage limitations. Indeed, the Queen's Bench was prompted to recognize that programmers knew that two-digit codes could render the software-embedded products obsolete with the beginning of the new millennium and took the deliberate decision to use this format regardless. The Court relied on a 1996 report, commissioned by CPR, which stated: "[t]he year 2000 problem is a limitation in computer systems [which rely on] applications built using commonly accepted standards [that] will not handle dates beyond December 31, 1999, correctly."<sup>175</sup> Just like the US *Committee on the Judiciary* accepted the two-digit code as a "tradition" of the computer industry, the Queen's Bench held that the code "became embedded in the worldwide computer culture and remained the standard method for date processing, manipulation and storage."<sup>176</sup> The Court welcomed several reasons why the two-digit recognition code continued to be an industry standard, noting that, despite technological developments that eliminated internal memory and storage limitations, programmers "continued to reuse the two-digit date recognition code ... in order for new programs to remain compatible with the vast amount of existing two-digit date data that had accumulated over the previous 20 years."<sup>177</sup> With these factors in mind, the Court concluded that the two-digit date recognition code was not more than "a choice of the application programmer not to provide a century recognition routine."<sup>178</sup>

Programmers could have written codes to mitigate the risk of obsolescence, but they did not have to. They made a conscious, not faulty, design decision that would potentially cause malfunctions or end the useful life of their products at the turn of the millennium. The case focused on the insurance contractual claim and did not raise the responsibility of programmers, but it certainly gave some indications as to the creative freedom in designing software. Programmers simply assumed the products would be replaced by an innovation through a "creative destruction" process.<sup>179</sup> While they might not have *planned* for the obsolescence of their products *per se*, they did not ensure their reliable long-term usefulness.<sup>180</sup> Obsolescence was preventable, but they had no duty to plan accordingly. The secrecy of software conception, concealed in the layers of integrated circuits, developed in secured laboratories and implemented by employees under strict confidentiality agreements, make the determination of the life expectancy of software all the more complex. In addition to its sophistication, software is a property unlike any other tangible object. Its polymorphic, evolving nature draws on the knowledge and continuous inputs of software engineers and developers and thus reveals itself to be a service for users more than their property. This passage from

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<sup>175</sup> *Ibid* at para 40 citing Keane Canada, Inc, "Year 2000 Risk Assessment Project: Final Report" (20 December 1996) ["Keane report"].

<sup>176</sup> *American Home Assurance Company*, *supra* note 151 at para 5.

<sup>177</sup> *Ibid*.

<sup>178</sup> *Ibid* at para 39.

<sup>179</sup> Guiltinan, *supra* note 153 at 19.

<sup>180</sup> *Ibid* at 24.

property to service represents a paradigm shift. For software-enabled products, the question is perhaps less about durability than serviceability.

The lifecycle, performance or functionality of software or smart objects can be enhanced or diminished in various ways over time as the software systems are configured, customized and modified (e.g., a security update of the operating system). In the digital universe, the useful life of a physical object may depend on these updates, upgrades and specifications, as well as the interdependence and interoperability, or lack thereof, of systems. The obsolescence of software-enabled products is then, in a sense, truly “programmed.” The control of the programming language, as once was the press,<sup>181</sup> directly affects the digital economy. The fact that Application Programming Interfaces (API) are now the site of a fierce copyright war in the US.<sup>182</sup> is indeed an indication that language and code are the new control commands. The Y2K problem can be seen as a first demonstration that code is power. In the case of smart objects, the cause of their obsolescence could be, as in the past, attributed to the programmer—should such impairment be proven— but what about issues of interoperability whereby, for instance, an application is blocked from operating, or the sudden withdrawal of authorization to use key codes? Both may affect durability. Can it then be regarded as programmed obsolescence even if the cause is external? Should law look into *provoked obsolescence* as a special cause of action? In the affirmative, it would be a Dantean task, especially when codes essential or instrumental to interoperability can be reserved and claimed as intellectual property, a conclusion recently reached by the United States Court of Appeals for the Federal Circuit in the case *Oracle America Inc v Google LLC*.<sup>183</sup> Thirty seven packages of API were found copyrightable and infringed by Google who copied the material verbatim, without alteration, in the Android operating system of its smartphones. The Court of Appeals rejected the fair use defense and reversed the 2012 District Court holding that the functional considerations predominated in their design and therefore were not eligible to copyright protection.<sup>184</sup> The case invigorates intellectual property and poses serious questions about code as a language to allow compatibility and interoperability. In addition, when a product combines hardware and software, there is a division of ownership and rules along the lines of tangible and intangible property. This distribution of powers over things, tangible or intangible, can be problematic: the owner of the physical object can be subjected to the software and its intellectual property owner. Presented in these terms, programmed obsolescence can be an act of

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<sup>181</sup> Marshall McLuhan, *The Gutenberg Galaxy: The Making of Typographic Man*, revised ed (Toronto: University of Toronto Press, 2011) at 203, 267–70.

<sup>182</sup> *Oracle America, Inc v Google, Inc*, Appeal No 17-1118 (Fed Cir 2018) [*Oracle*]. The case deals with Java API packages, which are collections of “pre-written Java source code programs for common and more advanced computer functions” owned by Oracle (*ibid* at 8). Java programming language is generally free. However, Oracle imposes certain terms and conditions for use of the Java APIs in a competing platform. The case is expected to be heard by the Supreme Court of the United States in 2020.

<sup>183</sup> *Ibid*.

<sup>184</sup> *Oracle America, Inc v Google Inc*, No C 10-03561 WHA (ND Cal 2012), online (pdf): *Electronic Frontier Foundation* <[www.eff.org/files/alsup\\_api\\_ruling.pdf](http://www.eff.org/files/alsup_api_ruling.pdf)> (the district court described the APIs as “a utilitarian and functional set of symbols” at 4).



colonization or infeudation of the matter by the code. It highlights how complex the issue of liability for programmed obsolescence of smart objects could be.

The Y2K problem flags the dematerialisation of the economy, our dependence to code and the radical transformation of the equation of time, utility and property. Broadly speaking, the value of an object is determined, in part, according to the properties of the composition of matter, matter which is subject to deterioration over time, such as tungsten in the case of GE's light bulbs. A such, matter is a determinant of durability and value. In contrast, the increased use of licences reduces the importance of the physical disposition of things. Value has morphed into a continuous current of interpersonal rights and obligations extending beyond the sale of the matter. Taking into consideration the product-service value of software-enabled goods, contract termination and chargeback guarantees offer a potential avenue to remedy provoked or premature obsolescence.

While the Senate Special Committee did not blame programmers for Y2K, it brought to the attention of the House of Representatives the lesson to be learnt from that episode:

At the heart of the problem lies a serious disconnect between those who use technology and those who create it. On a worldwide scale, leaders of corporations and countries are struggling to understand the Y2K problem. In the process, they are receiving a crash course in the fragile mechanics of information technology. The Committee feels strongly that Y2K, as the first widespread challenge of the information age, must leave a legacy of increased awareness and appreciation of information technology's role in social and economic advancement.<sup>185</sup>

Can an object speak for itself? Can it point *ex post* to the liability of its makers for not ensuring that the object continues to fulfil the functions it was acquired for? A tale of modernity, progress and science lies in the background of the stories of obsolescence. As objects deteriorate over time, a technology and its magics wear off, replaced by new alternatives. How a product will evolve is not immediately observable and challenges the status of the owner of the object who has only limited control over the technology. Law, because it is not written by scientists, attempts to safeguard human dignity by ensuring the enjoyment of property, thus perpetuating a long-lasting attitude of suspicion, defiance but also admiration of lawyers towards science. Obsolescence is the no-man's land between entrenched positions, that of science and law, a terrain of dialogue and coproduction.<sup>186</sup>

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<sup>185</sup> Special Committee, *Investigating the Impact of the Year 2000 Problem*, *supra* note 164 at 7–8.

<sup>186</sup> Pierre-Emmanuel Moysé, "Innovation: In the Shadow of Law", WIPO/IPL/GE/16/T8 (2016) online: *World Intellectual Property Organization* <[www.wipo.int/meetings/en/doc\\_details.jsp?doc\\_id=338396](http://www.wipo.int/meetings/en/doc_details.jsp?doc_id=338396)>. See also Sheila Jasanoff, "Making Order: Law and Science in Action", in Edward J Hackett et al, eds, *Handbook of Science and Technology Studies*, 3rd ed (Cambridge, MA: MIT Press, 2007) at 761–86.

### III—Epilogue: The Apple of Discord

Through the years, programmed obsolescence has evolved to a point where its early chapters are often quickly skimmed through. The concept, as it stands today, may seem far from London’s state-administered leases on consumer goods, yet recent legislative and jurisprudential developments bear the mark of the stories of the past. This section seeks to reconnect the current discourse on programmed obsolescence to its origins. Some recent developments, namely (a) the legislative attempts to sanction programmed obsolescence in France and Québec and (b) the wave of cases and settlements in response to the slowdown of Apple’s iPhones following the installation of an update, reveal the influence and relevance of prior academic work and cases on the obsolescence of products. Though it is non-exhaustive, this overview reveals that programmed obsolescence, as it attracts more attention, is taking on new proportions, but it still escapes the grip of the law.

#### A—The Laws of Obsolescence

A number of legislative actions, predominantly in the area of consumer law, has been initiated in recent years to address programmed obsolescence.<sup>187</sup> The reasons for the adoption of specific legislation are, in our opinion, twofold. First, the narrative of programmed obsolescence fueled the idea of a vast industrial conspiracy at the expense of the consumer. The GE anti-trust case became a caricatural example of unscrupulous and abusive business practices. It also showed that anti-trust law is ill-suited to address programmed obsolescence. Programmed obsolescence only constitutes a corroborative element of the conduct it targets, collusion. Therefore, from a policy standpoint, the passing of a bill rendering this practice illegal clearly seeks to respond to the growing public scrutiny and criticism of the act of programming the premature obsolescence of goods in light of the economic and social costs of the replacement of goods and waste. It shows governmental initiative even if the key issue, the very definition and reality of programmed obsolescence, remains unclear. Second, the new legislative initiatives are carried by a greater objective which also receives a growing adhesion, that of preserving the environment. In Québec, the current government recently tabled Bill 197 *An Act to amend the Consumer Protection Act to fight planned obsolescence and assert the right to repair goods*.<sup>188</sup> This Bill, drafted by students and endorsed by a Member of the National Assembly, borrows from different foreign legislations, notably the 2015 French law, *Loi relative à la transition énergétique pour*

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<sup>187</sup> See Thierry Libaert, “Pour une consommation plus durable: en phase avec les enjeux européens” (2018), online (pdf): *Actu Environnement* <[www.actu-environnement.com/media/pdf/news-32768-rapport-T-Libaert-consommation-durable.pdf](http://www.actu-environnement.com/media/pdf/news-32768-rapport-T-Libaert-consommation-durable.pdf)>. See e.g. EC, *European Parliament Resolution of 4 July 2017 on a longer lifetime for products: benefits for consumers and companies*, [2018] OJ, C 334/60; Belgium, No 55-0193/003, *Proposition de loi visant à lutter contre l’obsolescence programmée et à soutenir l’économie de la réparation*, 2d Sess, 55th Chamber of Representatives, 2019.

<sup>188</sup> *Bill 197*, *supra* note 7. For a pan-Canadian study of obsolescence, see also Annick Girard et al, “Obsolescence des appareils électroménagers et électroniques: quel rôle pour le consommateur?” (2018), online (pdf): *Équiterre* <[www.equiterre.org/sites/fichiers/fr\\_rapportobsolescence\\_equiterremai2018.pdf](http://www.equiterre.org/sites/fichiers/fr_rapportobsolescence_equiterremai2018.pdf)>.

*la croissance verte*, which pioneered the movement.<sup>189</sup> Section L.441-2 of the French *Code de la consommation* now criminalizes “techniques by which a manufacturer aims to deliberately reduce the life of a product to increase the replacement rate.”<sup>190</sup> The reference to “replacement rate” is reminiscent of London’s work, although it constitutes here an element of the infraction, that is the desired outcome of the implemented techniques, and not, as it is in London’s plan, a state-controlled program to stimulate the economy.<sup>191</sup> The infraction can be punished by up to two years of prison and a fine of €300 000.<sup>192</sup> Somewhat less stringent, the Québec Bill opts for a statutory fine of \$10,000 for any person who deliberately engages in planned obsolescence practices defined as “a set of techniques by which the useful life of a good to be offered for sale or lease is reduced.”<sup>193</sup> The Québec Bill also contains new provisions with respect to access to repair services, repair manuals and warranties by strengthening the obligations of manufacturers and merchants.<sup>194</sup> Moreover, the Bill provides for the implementation of a durability rating for goods, which would indicate the average life expectancy of the product.<sup>195</sup> The *Bureau de normalisation du Québec*, a government body, would be responsible for determining the durability rating of goods.<sup>196</sup> This group that is tasked with the standardization of the durability of goods brings to mind London’s committee of “competent engineers, economists and mathematicians, specialists in their fields.”<sup>197</sup> The idea of a government office to determine the average durability of goods belongs to the semantic field of the work of London, Veblen and the Technocrats. At their core, these legislative initiatives both reflect a desire to ensure a governmental oversight over the production of goods and limit corporate control in this respect. The climate crisis, as did the Great Depression, exacerbates the need for a degree of economic planning which includes in its equation variables that have been neglected: the exhaustion of natural resources as well, as the environmental and social costs of producing, consuming and disposing of goods.

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<sup>189</sup> *Loi relative à la transition énergétique pour la croissance verte*, *supra* note 5.

<sup>190</sup> C cons, s L.441-2.

<sup>191</sup> Indeed, the French preparatory work, reports and debates, contain several references to Bernard London and stories of obsolescence, in particular, the Phoebus Cartel. See e.g. France, Assemblée nationale, Commission du développement durable et de l’aménagement du territoire, *Rapport d’information déposé par la mission d’information sur la gestion durable des matières premières minérales*, presented by Christophe Bouillon & Michel Havard, Report No 3880, (26 October 2011) at 14, online (pdf): <[www.assemblee-nationale.fr/13/rap-info/i3880.asp](http://www.assemblee-nationale.fr/13/rap-info/i3880.asp)>; Shailendra Mudgal et al, “Étude sur la durée de vie des équipements électriques et électroniques” (2012), online (pdf): *Agence de la transition écologique* <[www.ademe.fr/sites/default/files/assets/documents/84636\\_duree\\_de\\_vie\\_des\\_eee.pdf](http://www.ademe.fr/sites/default/files/assets/documents/84636_duree_de_vie_des_eee.pdf)>.

<sup>192</sup> C cons, *supra* note 190, ss L.454-6, L.454-7.

<sup>193</sup> *Bill 197*, *supra* note 7, cl 1 modifying s 1 of the *CPA*, *supra* note 2. The Bill also provides, “[a] person convicted of an offence under paragraph *i* of s 277 is liable to a minimum fine of \$10,000. For a second or subsequent conviction, the offender is liable to a fine with a minimum limit twice as high as that prescribed in the first paragraph” (cl 10 adding s 278.1 to the *CPA*, *supra* note 2).

<sup>194</sup> *Bill 197*, *supra* note 7, cl 3 (replacing s 39 of the *CPA*, *supra* note 2), cl 5 (adding s 46.1 to the *CPA*, *supra* note 2) and cl 10 (modifying s 292 of the *CPA*, *supra* note 2).

<sup>195</sup> *Bill 197*, *supra* note 7, cl 1 (adding s e.2 to the *CPA*, *supra* note 2).

<sup>196</sup> See also *Bill 197*, *supra* note 7, cl 12 (adding ss 320.1–320.3 to the *CPA*, *supra* note 2).

<sup>197</sup> London, *Ending the Depression*, *supra* note 9 at 12.

While these type of laws may be dissuasive, their normative effect are yet to be demonstrated. To this date, the French legislation has not led to a conviction directly related to programmed obsolescence. Several reasons may explain this apparent inertia. In most jurisdictions, consumers are already entitled to goods free from defects affecting their use or durability. When goods are defective, consumers can typically rely upon private law for redress. Québec's *Consumer Protection Act*, for instance, provides legal warranties whereby "[g]oods forming the object of a contract must be durable in normal use for a reasonable length of time, having regard to their price, the terms of the contract and the conditions of their use."<sup>198</sup> The burden of proof regarding manufacturer liability is also lightened: once the purchaser has proven that the good has indeed perished or defaulted prematurely, the defect is presumed to exist.<sup>199</sup> Secondly, while presumptions can facilitate the process of proving the existence of a defect, proving the existence of obsolescence, especially if it is provoked or programmed, remains onerous. As the *General Electric* anti-trust cases demonstrate, extensive investigative powers enforced by public authorities might be required to obtain evidence of the design decisions that were made and the objectives that were sought. Furthermore, technical constraints and compromises, as in the case of the light bulbs, as well as industry knowledge and standards at the time the good was produced, as in the case of the Y2K bug, may offer sufficient grounds to reject allegations of programmed obsolescence. Finally, laws to sanction programmed obsolescence, because they are by-products of property and product liability regimes, have not fully grasped the hybrid character and particularities of electronic devices and smart objects and, in particular, the risk of software obsolescence. In a context of a service economy and licences where value resides in how the user experiences the intangibles, the replacement of a good may be prompted not by the deterioration of the physical product, but rather by a decline in the uses and the experience that it provides to the user. In this new chapter of programmed obsolescence, the evolutionary law of software—governing the access to codes and platforms, interoperability and the freedom to accept updates and upgrades, to name a few—may require a new approach to durability. Unlike a burned out light bulb, the replacement of complex products may simultaneously be the result of different types of obsolescence, from design decisions to aesthetics, for which various actors may be responsible.

As countries join the cortege against programmed obsolescence, the driving force of the movement, that is, the collective aspirations for sustainable development and the need for immediate actions, is forcing a new reflection in the design of responsible modes of production, consumption and disposal of the goods. If the replacement rate was once the measure of prosperity, it has become the pathology of a dysfunctional system. Here, Veblen and his prescient and insightful comments

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<sup>198</sup> *CPA*, *supra* note 2, s 38. See also *ibid* ss 37, 53.

<sup>199</sup> *Ibid*; 1729 CCQ, which provides that "[i]n a sale by a professional seller, a defect is presumed to have existed at the time of the sale if the property malfunctions or deteriorates prematurely in comparison with identical property or property of the same type; such a presumption is rebutted if the defect is due to improper use of the property by the buyer." See Office de la protection du consommateur, "Examples of Judgments Concerning Legal Warranties" (2020), online: *Government of Québec* <[www.opc.gouv.qc.ca/en/consumer/topic/warranties/](http://www.opc.gouv.qc.ca/en/consumer/topic/warranties/)>.

highlight that he, perhaps more accurately than anyone, saw the rise of the age of mass consumption and its consequences. Ostentatious consumption rhymes with conspicuous waste. In his view, the benefits of industrial art and knowledge are *wasted* by profiteurs who pursue their own interests. The appetite of the consumers for new products is artificially stimulated by marketing techniques and the desire to gain a competitive advantage with the release of, sometimes only marginally, improved products. Veblen's ostentatious consumption is today aesthetic and psychological obsolescence: a good becomes obsolete as matter of changing tastes and needs, not necessarily one of performance or function. If the idea of waste is consubstantial to obsolescence from its inception, it has, however, taken an entirely new dimension now that environmental concerns are one of the prime movers of legislative actions. France's obsolescence law and Québec's Bill 197 purport to reduce the environmental impacts of consumption and to embrace, somewhat timidly, the ecological movement of sustainability and frugality. However, by focusing on production, this approach only partially addresses the issue of obsolescence and the replacement of products. Fundamentally, programmed obsolescence is only one of many facets of overconsumption. Perhaps, when assessing the techniques that compromise the durability of a product, one must also analyze how consumers experience goods, as well as the reasons that drive the replacement of such goods. Apple's admission, in 2017, that one of its updates slowed down some of its iPhones to reduce the stress on the battery charge resurrected old demons and blew the obsolescence hunting horn. The case reflects a fight for the control of knowledge and experience.

## **B—The Bitten Apple**

Across the world, a series of legal actions against Apple were launched after iPhone 6, 6s, SE and 7 slowed down following the installation of software updates of the operating system (iOS). The case has been described as the Apple Batterygate. The media and consumer organizations quickly denounced the throttling controversy to be an instance of programmed obsolescence to incite consumers to purchase new iPhones.<sup>200</sup> A brief overview of how the cases unfolded shows the role of public authorities, the asymmetry of information between the producers and the consumers and the fight over the control of the tangible and intangible elements of complex products.

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<sup>200</sup> See e.g. "Apple et Samsung sanctionnées en Italie pour obsolescence programmée", *Le Monde* (24 October 2018), online: <[www.lemonde.fr/entreprises/article/2018/10/24/apple-et-samsung-sanctionnees-en-italie-pour-obsolescence-programmee\\_5373931\\_1656994.html](http://www.lemonde.fr/entreprises/article/2018/10/24/apple-et-samsung-sanctionnees-en-italie-pour-obsolescence-programmee_5373931_1656994.html)>; See e.g. Janet Burns, "Italy Fines Apple, Samsung A Few Mil for 'Planned Obsolescence' in Phones", *Forbes* (24 October 2018), online: <[www.forbes.com/sites/janetburns/2018/10/24/italy-fines-apple-samsung-a-few-million-for-planned-obsolescence-in-phones/#1003f3d15afb](http://www.forbes.com/sites/janetburns/2018/10/24/italy-fines-apple-samsung-a-few-million-for-planned-obsolescence-in-phones/#1003f3d15afb)>; Adam Sarhan, "Planned Obsolescence: Apple Is Not The Only Culprit", *Forbes* (22 December 2017), online: <[www.forbes.com/sites/adamsarhan/2017/12/22/planned-obsolescence-apple-is-not-the-only-culprit/#670df5e23cf2](http://www.forbes.com/sites/adamsarhan/2017/12/22/planned-obsolescence-apple-is-not-the-only-culprit/#670df5e23cf2)>. For the class action in Québec, see e.g. "Obsolescence programmée: les recours collectifs contre Apple s'accumulent", *Radio Canada* (27 December 2017), online: <[ici.radio-canada.ca/nouvelle/1075304/recours-collectifs-contre-apple-lalentissement-volontaire](http://ici.radio-canada.ca/nouvelle/1075304/recours-collectifs-contre-apple-lalentissement-volontaire)>.

In France, the competition agency, the *Direction générale de la concurrence, de la consommation et de la répression des fraudes* (DGCCRF) opened an investigation in 2018, following a complaint by French advocacy group *Halte à l'obsolescence programmée* (HOP) alleging that Apple committed the new offence of programmed obsolescence. In February 2020, the DGCCRF concluded that Apple did not adequately inform iPhone users that updates of the exploitation systems iOS (10.2.1 and 11.2) could slow down the processor speed. The DGCCRF news release gives little information as to the legal characterization of the impugned activities. In a laconic statement, the DGCCRF indicates that

[t]hese updates ... included a dynamic power management feature that could, under certain conditions and especially when the batteries were old, slow down the operation of iPhone 6, SE and 7 models. Failure to revert to the previous version of the operating system would have forced many consumers to change the battery or even buy a new phone.<sup>201</sup>

The DGCCRF concluded that the failure to adequately inform the consumers amounted to a “deceptive commercial practice by omission.”<sup>202</sup> Following an agreement between the French prosecutor and Apple, the company agreed to pay €25 million and to publish a communiqué on their website for a month.<sup>203</sup> In a statement, the decision was celebrated by HOP, which nevertheless expressed regret that the decision deprived the public of the opportunity to put planned obsolescence on trial.<sup>204</sup> While the DGCCRF carefully pointed out that the update only slowed down degraded batteries and noted that the reduction in performance could force the replacement of the phones, it was not the technique in itself that was to blame. The DGCCRF acknowledged the impossibility for owners of the affected phones to cancel the update and recognized that their freedom to control how they use and experience their goods was infringed.

In this sense, the current debates on obsolescence become a way to address the issue of the asymmetry of power between producers and consumers and the need for more transparency with respect to a product’s functionality, durability and complexity. In 2018, the Italian *Autorita’ Garante della Concorrenza e del Mercato* (Italian Competition Authority, ICA) fined, under two separate decisions, both

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<sup>201</sup> France, Direction générale de la concurrence, de la consommation et de la répression des fraudes, “Transaction avec le groupe APPLE pour pratique commerciale trompeuse” *Ministère de l’économie des finances et de la relance* (7 February 2020), online: <[www.economie.gouv.fr/dgccrf/transaction-avec-le-groupe-apple-pour-pratique-commerciale-trompeuse](http://www.economie.gouv.fr/dgccrf/transaction-avec-le-groupe-apple-pour-pratique-commerciale-trompeuse)> [translated by author].

<sup>202</sup> *Ibid.*

<sup>203</sup> *Ibid.*

<sup>204</sup> “Obsolescence des iPhone : une sanction historique contre Apple” *Halte à l’obsolescence programmée* (7 February 2020), online: <[www.halteobsolescence.org/apple-condamne-suite-a-la-plainte-deposee-par-hop/](http://www.halteobsolescence.org/apple-condamne-suite-a-la-plainte-deposee-par-hop/)>.

Apple<sup>205</sup> and Samsung<sup>206</sup> for unfair commercial practices concerning software updates affecting the performance of their products. The two firms were fined €10 million and €5 million respectively. The media hastily reported the case of Apple's iPhones as a programmed obsolescence case although it was not filed as such. The allegation of programmed obsolescence only made its way in the decision through the arguments made by the consumers' representatives, seemingly with the objective of introducing proof of bad character and taking advantage of the public outcry and attention that the concept had gained.<sup>207</sup> However, the allegation was not determinative of the statutory violations for which Apple was found liable. Indeed, Apple was condemned under specific provisions of the *Italian Consumer Code*<sup>208</sup> pertaining to unfair commercial practices, for, *inter alia*, having misled and omitted to properly inform the consumer and for insistently asking for updates without customers being adequately informed in advance about the inconvenience that the installation of these updates might cause, and giving only limited and belated advice about how to remedy these shortcomings.<sup>209</sup> Again, the ICA's decision highlighted the lack of clear alternatives or remedies to the problem even if Apple had implemented its worldwide Reduced Price Battery Replacement Program.<sup>210</sup>

In the United States, Apple had to answer questions from the Senate Commerce Committee regarding its throttling practices.<sup>211</sup> Apple publicly released their response in February 2018.<sup>212</sup> In its statement, Apple insisted that its throttling practices were dictated by technological necessity rather than programmed obsolescence:

We have never—and would never—do anything to intentionally shorten the life of any Apple product or degrade the user experience to drive customer upgrades. Our goal has always been to create products that our customers love, and making iPhones last as long as possible is an important part of that.”<sup>213</sup>

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<sup>205</sup>“PS11039 [Apple]” (25 September 2018), online (pdf): *Italian Competition Authority* <agcm.it/dotcmsdoc/allegati-news/PS11039\_scorr\_sanzDich\_rett\_va.pdf> [Apple ICA].

<sup>206</sup> “PS11039 [Samsung]” (25 September 2018), online (pdf): *Italian Competition Authority* <agcm.it/dotcmsdoc/allegati-news/PS11009\_scorr\_sanz\_omi\_dichrett.pdf> [Samsung ICA].

<sup>207</sup> Apple ICA, *supra* note 205 at paras 96–100; Samsung ICA, *supra* note 206 at para 46.

<sup>208</sup> Italy, *Codice del Consumo*, Decreto Legislativo 6 September 2005, n 206 ss 20–21, 23–24.

<sup>209</sup> Apple ICA, *supra* note 205 at paras 161ff.

<sup>210</sup> *Ibid.* For Canada, see also “iPhone Out-Of-Warranty Battery Replacement Credit” (2018), online: *Apple* <support.apple.com/en-ca/iphone-out-of-warranty-battery-replacement-credit>.

<sup>211</sup> Tripp Mickle and John D McKinnon, “US, French Officials Question Apple Over iPhone Battery Slowdowns” *Wall Street Journal* (9 January 2018), online: <www.wsj.com/articles/u-s-french-officials-question-apple-over-iphone-battery-slowdowns-1515545073>.

<sup>212</sup> Letter from Apple Chairman, John Thune, to the United States Senate Committee on Commerce, Science and Transportation, Washington, DC, 20510 (2 February 2018), online (pdf): <cdn.vox-cdn.com/uploads/chorus\_asset/file/10167025/Apple\_Response\_to\_SCC\_Feb\_2\_2018.0.pdf>.

<sup>213</sup> *Ibid.*

Apple provides in their letter a timetable of the process that led to this software update.<sup>214</sup> They appear to credibly lay out the reports that they have received from consumers whose phones were unexpectedly shutting down around 30% battery charge. With the iOS 10.2, released on December 2016, Apple included a telemetry diagnostic tool that revealed issues with the degradation of the lithium batteries: when iPhones were hitting peaks of processor power, batteries that were cold, old or low on charge were unable to give a sufficient power supply and the phones were shutting off. The iOS 10.2.1, released in January 2017, was sent to users with the option of installing the update and an alert that stated that the update included “bug fixes and improved the security of [the user’s] iPhone or iPad.” In February 2017, Apple added more information in a “Read Me” section which stated that the iOS 10.2.1 “improves power management during peak workloads to avoid unexpected shutdowns on iPhone.”<sup>215</sup> In a statement released in December 2017, Apple explained that the power management features is intended to “smooth out the instantaneous peaks” by looking at a combination of the device temperature, battery state of charge and battery impedance to avoid unexpected shutdowns, which may have some effects such as longer launch times, lower frame rates, backlight dimming and lower speaker volume.<sup>216</sup> They argued that the software update was necessary to manage performance and avoid unexpected shutdowns as batteries age. They insist that, in fact, the update was a technique to counter the effects of obsolescence.<sup>217</sup>

The Apple Batterygate is perhaps not as clear of a case of programmed obsolescence as it was portrayed in the media. It is rather a case of a poorly designed product and lack of transparency about the power management feature included in the update and how it would potentially affect the performance of the device as the batteries age.<sup>218</sup> As it was the case in the light bulb affair, consumers did not have the information needed to understand the compromise that the update was intended to reach between durability and efficiency. This lack of transparency is reflected in the decision of the French DGCCRF and the Italian ICA decisions. In the United States,

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<sup>214</sup> *Ibid.*

<sup>215</sup> “About iOS 10 Updates” (last updated 2 March 2020), online: *Apple* <support.apple.com/en-ca/HT208011>.

<sup>216</sup> “iPhone Battery and Performance: Understand iPhone performance and its relation to your battery” (last updated 11 May 2020), online: *Apple* <support.apple.com/en-ca/HT208387>.

<sup>217</sup> The argument was made in the *Apple* ICA, *supra* note 205 at para 102.

<sup>218</sup> See e.g. Registry of Class Actions, “Overview of the application 500-06-000893-178 (30 November 2017), online: *Superior Court of Québec* <www.registredesactionscollectives.quebec/en/Consulter/ApercuDemande?NoDossier=500-06-000893-178>. Saint-Onge has launched a class action against Apple Canada and Apple Inc “for deceptive trade practices and false advertising in violation of civil, contractual and consumer laws in a matter commonly known to the general public as ‘planned or built-in obsolescence’” (*ibid* at para 1). The applicant and class members claim that Apple “explicitly advertised and advised consumers that the iPhone 5 and 6 are compatible with iOS and encouraged updates through promises of improved Apps, new functionality, better performance, and improved security”. Owners who did so, however, “loss use of a functional iPhone” (*ibid* at para 21) and were, therefore, “forced to purchase a new smartphone as the only alternative to living with a slow, buggy, and disruptive device” (*ibid* at para 36).



Apple agreed to pay up to \$500 million to settle the matter and avoid the burdens and costs of litigation but still denied wrongdoing.<sup>219</sup> Several lawsuits were filed by consumers against Apple across the United States in response to the throttling controversy. In 2018, the cases pending in different districts were coordinated into pretrial proceedings.<sup>220</sup> While the case was settled, the Court ruled that the plaintiffs did not sufficiently plead that Apple fraudulently omitted information about the plaintiffs' devices under California consumer protection laws. The Court held that they failed to explain precisely how those statements are misleading when consumers knew about "the degradation of batteries and the increasing capability of software."<sup>221</sup> The Court concluded that

[i]n reality, Plaintiffs apparently seek to hold Apple liable for failing to provide a battery that lasted as long as Plaintiffs preferred. Plaintiffs' own allegations are to that effect. Plaintiffs readily concede "that iPhones worked as expected when new." In their view, the problem is that "[a] battery and processor must be designed such that even as the battery ages and loses performance, it will still be capable of meeting the processor's peak power demands for years to come." ... Nevertheless, California courts have been careful to "cabin the scope of the duty to disclose to avoid the unsavory result that manufacturers are on the hook for every product defect that occurs at any time, regardless of any time limits contained in their warranties."<sup>222</sup>

As in the Y2K case, assumptions about knowledge regarding the obsolescence of software-enabled products may tip the balance. However, the Court found that consumers sufficiently stated a claim for trespass to chattels, noting that the allegation is not that the defendant's actions "merely ... shortened the battery life of the [devices]," but "instead, the alleged changes wrought by Apple's iOS updates in the instant case "establish a significant reduction in service constituting an interference with the intended functioning of the system."<sup>223</sup> As it was the case with the Y2K episode, the throttling controversy also reflects a fight for the control of intangible embedded in the tangible product. While consumers were the owners of the iPhones, Apple continued to exert some control over the use, performance and durability of the products through software updates. The case forces us to see programmed obsolescence under a new light in a context where consumers use the label of "planned

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<sup>219</sup> "No. 02", *Westlaw Journal Class Action 07* (17 March 2020); "Apple to pay users \$25 an iPhone to settle claims it slowed old handsets", *The Guardian* (2 March 2020), online: <[www.theguardian.com/technology/2020/mar/02/apple-iphone-slow-throttling-lawsuit-settlement](http://www.theguardian.com/technology/2020/mar/02/apple-iphone-slow-throttling-lawsuit-settlement)>.

<sup>220</sup> *re Apple Inc Device Performance Litigation* [2018] 347 F Supp (3d) 434 [*re Apple*, 2018], partly reconsidered in *re Apple Inc Device Performance Litigation* [2019] 386 F Supp (3d) 1155 (on procedural matters).

<sup>221</sup> *re Apple*, 2018, *supra* note 220 at para 462 (adding "Apple's "one-year warranty" on its batteries expressly notes that the iPhone "battery is designed to retain up to 80% of its original capacity at 500 complete charge cycles" at para 462).

<sup>222</sup> *Ibid* at 463.

<sup>223</sup> *Ibid* at 455.

obsolescence” to denounce not product failures or defects, but rather interferences (such as a decrease in performance) affecting their user experience, especially when these are impossible or difficult to reverse.

#### IV—Conclusions

The stories of obsolescence, planned or programmed, are inhabited by beliefs and collective narratives about technology. The dominant theme running through the chapters is that technology and its owners confiscate control over the use of a product, expropriating or reducing the capacity of the user to exercise command over it. Obsolescence becomes the *diabolus ex machina*. Technological objects make it difficult, if not impossible, for users to understand and repair their goods. Manufacturers of these products are in a position to program the use, the performance and the obsolescence of the goods, a power that they can use to trigger further consumption. In Veblen’s account of the emergence of the industrial civilization, technology changes the nature of socio-economic relationships between actors of the industry. Owners of the means of production become the *de facto* usufructuary and first beneficiary of the technical knowledge. The knowledge once held by the community of craftsmen is concealed in the machine made by engineers who are hired by investors. In Veblen’s words, “[t]he possession of the material equipment, therefore, placed in the discretion of its owners the utilisation of such technological knowledge and skill as the members of the given crafts might possess. The usufruct of the handicraft community’s technological proficiency in this way came to vest in the owners of the plant”.<sup>224</sup> Innovation processes are thereby internalized and the automated functions of machines make the worker’s involvement and skills dispensable. Technical knowledge is bought and reserved for competitive advantages. It is used to design products in accordance with the specifications that the manufacturer sees fit with an eye for maximizing profits. This is perhaps the lesson of our investigation: the narratives of obsolescence omit to take into account how law, and in particular intellectual property law, grants power to owners of production means over the functionality of a product. After all, patents can be filed and obtained on improvements without being used. The GE case is indeed as much a case of unexploited innovation as it is one of monopolistic power. The technology for better and more durable lamps was available and patented, but it was more expensive to manufacture. More than an obsolescence story, the light bulb affair is a patent story. Through this prism, patent law is a perfectly legitimate retention mechanism. Indeed, some inventions will never be commercialized, however useful, socially or ecologically beneficial they may be. In the same way, copyright and trade secrets become strategies to prevent reverse engineering and are key instruments to control access to codes and algorithmic transparency. Settlements were an opportunity for Apple to escape intrusive evidentiary investigations into its internal operations. It is significant that Veblen himself, not a lawyer, became aware of the danger posed by intellectual property for the development of industrial society. On rare occasions, he shared his concerns on the nature of these new forms of property. In 1914, he wrote:

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<sup>224</sup> Veblen, *The Instinct of the Workmanship*, *supra* note 44 at 279.

“[i]n more advanced state of industrial arts, where ownership and the specialization of industry have had their effect, trade secrets, patent and copyrights are often of substantial value, and these are held in segregation from the common stock of technology.”<sup>225</sup> In 1919, he explicitly compared intellectual property to classical forms of monopolies such as conspiracy or the combination of ownership. Intangible property, he wrote, “represents a “conscientious withdrawal of efficiency,” an effectual control of the rate or volume of output.”<sup>226</sup>

At the end of our journey, we are left with the impression that obsolescence sits uneasily with the current prescriptions of the law. It has not been fully characterized as a tort or as a crime. Its current regulation, often short of evidence, is rather limited and indirectly addresses the issue by upholding the obligations incumbent on manufacturers to inform consumers. There are reasons for these hesitations. After all, programmed obsolescence puts capitalism on trial. Modern law, being a creature of the capitalist system and author of the long-standing institutions of contract and property, cannot easily, without great risk of internal conflict, endorse liberal and transformative values while, at the same time, vehemently condemn its natural offspring.

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<sup>225</sup> *Ibid* at 105.

<sup>226</sup> Thorstein Veblen, *The Vested Interests and the State of the Industrial Arts* (New York: BW Huebsch, 1919) at 74.