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# Has Capitalism Gone Virtual? Content Containment and the Obsolescence of the Commodity

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## ABSTRACT

This article examines how recent strategies of commodification have responded to challenges posed by digital and other self-reproducing contents. The examples of digitized cultural goods, plant patenting, and online gaming suggest that challenges to commodification have not come from intangibility per se but from forms of physical inscription associated with negligible costs of reproduction, sharing, and transmission. Whereas the physical characteristics of industrial products more or less met the requirements of content containment, self-reproducing and digital goods have demanded increasingly costly prosthetics to insure their maintenance as commodities. Three conclusions follow. First, and ironically, technological and physical devices embedded into objects confer renewed materiality on the commodity form. Second, and paradoxically, physical materializations of the commodity also provide a fresh handle for its manipulability. Finally, expanded prosthetics of commodification can be read as an indicator of the increasingly blatant historical inadequacy of the commodity's forcibly prolonged maintenance.

How virtual is the new economy? What in it may prove problematic for the future of capitalism? The idea that we are moving toward an “information society” or living in the “digital age” is not new, although what exactly is meant by these terms is still widely debated. Neither is the suggestion that the move means an epochal shift from tangible to intangible commodities.

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Many have argued that what forms the basis of production today is no longer the steam engine but software: flows of messages and images between networks now constitute the basic thread of social and economic life.<sup>1</sup> There appears to be a certain amount of supporting evidence for this. McDonald's Corporation makes its profit around the world not by grilling burgers but by franchising the brand. A Louis Vuitton bag is authentic not because of its shape, look, and feel, but because of its trademark. Books no longer take up space in one's home or office: they neatly fit into one's Kindle or iPad. Newspaper home delivery has given way to downloadable apps. Over three-quarters of the market value of Standard & Poor's 500 firms are made of intangible goods.<sup>2</sup> Intellectual property-intensive industries account for a third of the US gross domestic product.<sup>3</sup>

The shift from handling real "atoms" to processing virtual "bits" has captured scholarly attention, raising questions about what happens when products are configured and distributed digitally. Information technologies, the argument goes, blend the conventional division between material and immaterial, organic and artificial, actual and virtual.<sup>4</sup> This blurring and blending poses challenges not only to the cultural valuation and classification of goods but also to the protection of their economic value. New communication technologies, for example, "create both threats and opportunities for major media corporations," simultaneously reinforcing the profits of large companies and "undermining the dominant position of traditional networks."<sup>5</sup>

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in preparation of this article. Our reflection greatly benefited from critical comments by colleagues on an early version presented at the University of Chicago's "Critical Historical Studies" conference in December 2011, at the University of Amsterdam's "Dynamics of Culture and Citizenship" seminar in February 2012, and as well as the European University in St. Petersburg's conference "Pirates and Explorers." We are grateful to Mario Biagioli, Vincent Lépinay, Bill Sewell, Cédric Durand, and the two anonymous reviewers for their crucial reading of subsequent drafts, as well as to Olav Velthuis for sharing his knowledge on prosthetics in economic sociology.

1. Manuel Castells and Gustavo Cardoso, eds., *The Network Society: From Knowledge to Policy* (Washington, DC: John Hopkins Center for Transatlantic Relations, 2006).

2. Ugo Pagano and Maria Alessandra Rossi, "The Crash of the Knowledge Economy," *Cambridge Journal of Economics* 33, no. 4 (2012): 665–83, esp. 671.

3. Economics and Statistics Administration and United States Trademark and Patent Office, U.S. Department of Commerce, *Intellectual Property and the U.S. Economy: Industries in Focus*, March 2012, [http://www.uspto.gov/about/ipm/industries\\_in\\_focus.jsp](http://www.uspto.gov/about/ipm/industries_in_focus.jsp).

4. Saskia Sassen, "Towards a Sociology of Information Technology," *Current Sociology* 50, no. 3 (2002): 365–38; Donna Haraway, *When Species Meet* (Minneapolis: University of Minnesota Press, 2008); William Mazzarella, "Beautiful Balloon: The Digital Divide and the Charisma of New Media in India," *American Ethnologist* 37, no. 4 (2004): 783–804.

5. Eric Klinenberg and Claudio Benzecry, "Introduction: Cultural Production in a Digital Age," *Annals of the American Academy of Political and Social Science* 597 (2005): 6–18, quotation on 9.

Labor and capital—key driving forces of industrial society—are said to be replaced by flows of knowledge and information within a new “informational mode of development.”<sup>6</sup> Although the regime through which today’s society produces surplus and through which this surplus is expropriated and accumulated as capital should still be called “capitalism,” for some the regime itself has entered its “cognitive phase.”<sup>7</sup> It has moved beyond the exploitation of the physical labor power of the worker and now involves the extraction of a surplus from embodied and embedded social know-how. Paolo Virno argues that capital extracts value from “virtuosity”—the worker’s ability to conceptualize, improvise, and make decisions. Others have voiced fears that the sharply reduced dependency of the corporate giants of the knowledge industries on wage labor may lead to the exponential increase in a surplus population whose labor force is no longer needed.<sup>8</sup> Although worlds apart in its political program, Richard Florida’s take on creativity and his consequent claim about a new “creative class” can be seen as another variant of the attempt to grasp the purported historical transformation at the basis of economic production. Whether judged successful or not, Florida’s thesis is another illustration of a widely perceived need to reflect on the rise in nonphysical sources of value and their mediation: the intellect and the digital.<sup>9</sup> These paradigms, by incorporating the intangible and the virtual into the spheres of production and exchange, seek to capture the inclusion of previously unaffected lifeworlds into the cycle of capital accumulation. They converge in proclaiming the dematerialization of capitalism; they ostensibly point to the virtualization of its quantum.

In light of these discussions, our article extends interrogations over cognitive production and intellectual labor to another critical question of political economy—that of the realization of value through commodity circulation and ex-

6. Castells and Cardoso, *Network Society*.

7. Yann Moulier-Boutang, *Cognitive Capitalism* (Cambridge: Polity Press, 2012); see also Michael Hardt and Antonio Negri, *Commonwealth* (Cambridge, MA: Harvard University Press, 2009); Maurizio Lazzarato, “Immaterial Labour,” trans. Paul Colilli and Ed Emory, in Virno and Hardt, *Radical Thought*, 132–46.

8. Paolo Virno, “Virtuosity and Revolution: The Political Theory of Exodus,” in *Radical Thought in Italy: A Potential Politics*, ed. Paolo Virno and Michael Hardt (Minneapolis: University of Minnesota Press, 1996), 189–210. Jeremy Rifkin, *The End of Work: The Decline of the Global Labor Force and the Dawn of the Post-market Era* (New York: Putnam Publishing Group, 1995).

9. Richard Florida, *The Rise of the Creative Class: And How It’s Transforming Work, Leisure, Community and Everyday Life* (New York: Basic Books, 2002); cf. Jamie Peck, “Struggling with the Creative Class,” *International Journal of Urban and Regional Affairs* 29, no. 4 (2005): 740–70; Ann Markusen, “Urban Development and the Politics of a Creative Class: Evidence from a Study of Artists,” *Environment and Planning A* 38, no. 10 (2006): 1921–40.

change. We revisit key features of the information economy by considering the impact of digitization on commodification. What role does the contemporary economy of knowledge play in generating products that are increasingly difficult to commodify? Given the current state of technological development, what can be said about the rising economic importance of goods that can in principle be efficiently distributed for free, as their marginal cost of reproduction approaches zero? Shifting the materialist focus from commodities as objects to contemporary technologies of commodification as processes,<sup>10</sup> we examine key capitalist attempts at commodifying new content matter commonly associated with economic virtualization.

## I. COMMODITY MATTERS

How have recent technologies of commodification responded to changes in content matter? Already a number of authors have found circulating prophecies of digitalization excessive.<sup>11</sup> "There is no purely digital economy and no completely virtual corporation or community," wrote Saskia Sassen.<sup>12</sup> Within the Marxist tradition itself, theories of virtualization focusing on the production sphere have been strongly qualified.<sup>13</sup> Capitalism has not become "immaterial" recently: irreducible to "wealth," and a political relation of labor extraction, capital was never located in the physicality of objects and has thus always been immaterial in this sense.<sup>14</sup> Furthermore, labor and its extraction have always involved more than individual physical effort: they have always included "know-how," collective intelligence, feelings, and other human competences; this tendency did not appear in the 1970s.<sup>15</sup> As François Fourquet reminds us, industrial-era workers themselves "were suffused with ambient civilization, each of their gestures in-

10. Dan Schiller, "The Information Commodity: A Preliminary View," in *Cutting Edge: Technology, Information Capitalism and Social Revolution*, ed. Jim Davis, Thomas A. Hirschl, and Michael Stack (London: Verso, 1997), 103–20.

11. Michael S. Carolan, "The Problems with Patents: A Less than Optimistic Reading of the Future," *Development and Change* 40, no. 2 (2009): 361–88.

12. Sassen, "Towards a Sociology of Information Technology," 336.

13. Jean-Marie Harribey, "Le cognitivisme: Nouvelle société ou impasse théorique et politique?," *Actuel Marx* 36 (2004): 151–80; Michel Husson, "Notes critiques sur le capitalisme cognitif," *Contre-Temps* 18 (2007): 138–41; Ben Trott, "Immaterial Labour and World Order: An Evaluation of a Thesis," *Ephemera* 7, no. 1 (2007): 203–32.

14. See Moishe Postone, *Time, Labor and Social Domination: A Reinterpretation of Marx's Critical Theory* (New York: Cambridge University Press, 1993); Jonathan Nitzan and Shimshon Bichler, *Capital as Power: A Study of Order and Creorder* (New York: Routledge, 2009).

15. Heesang Jeon, "Cognitive Capitalism or Cognition in Capitalism? A Critique of Cognitive Capitalism Theory," *Spectrum: Journal of Global Studies* 2, no. 3 (2010): 89–116.

volved this whole civilization even when it looked mechanical and elementary," so that "from the shovel to the computer there is a line marked by continuity."<sup>16</sup> Thus, "saying that an economy is 'knowledge-based' does not mean that economic activity uses 'more' knowledge than it did before," clarify Benjamin Coriat and Olivier Weinstein, but rather that "knowledge has become *an economic good which, under changed conditions, can circulate as such*."<sup>17</sup>

This is not to suggest that the knowledge-based economy present no novel challenges to critical analysis. One characteristic feature of the information sector today is the increase in nonmarket and nonproprietary production. In the second half of the twentieth century, the transition to a communications environment associated with Web 2.0. allowed for an increased role of nonmarket production. Wikis, blogs, and other user-generated contents do not only symbolize the decentralization of the authority over knowledge and information production. They are modes of circulation and appropriation that bypass the mediation of the market altogether. In this environment, a much greater percentage of the product—in comparison to earlier technological revolutions—never assumes the commodity form in the first place. Although this "rise of greater scope for individual and cooperative nonmarket production of information and culture" promises to advance human development, it also "threatens the incumbents of the industrial information economy."<sup>18</sup> Free and open-source software (FOSS) developers and hackers who make and barter in the source code challenge the logic of copyright law.<sup>19</sup> Although the literature remains split on the underlying values of the open- and free-source projects<sup>20</sup>—some, in the liberal Enlighten-

16. François Fourquet, "Critique de la raison cognitive," in *Le capitalisme cognitif: La nouvelle grande transformation*, ed. Yann Moulier Boutang (Paris: Editions Amsterdam), 265–76, quotation on 267.

17. Benjamin Coriat and Olivier Weinstein, "Patent Regimes and the Commodification of Knowledge," *Socio-Economic Review* 10, no. 2 (2012): 267–92 (emphasis in original).

18. Yochai Benkler, *The Wealth of Networks: How Social Production Transforms Markets and Freedom* (New Haven, CT: Yale University Press, 2006), 14; see also Rishab Aiyer Ghosh, ed., *Code: Collaborative Ownership and the Digital Economy* (Cambridge, MA: MIT Press, 2005); and Marcelo Branco, "Free Software and Social and Economic Development," in Castells and Cardoso, *Network Society*, 289–304.

19. Rosemary J. Coombe and Andrew Herman, "Rhetorical Virtues: Property, Speech, and the Commons on the World-Wide Web," *Anthropological Quarterly* 77, no. 3 (2004): 559–74; E. Gabriella Coleman, "Code Is Speech: Legal Tinkering, Expertise, and Protest among Free and Open Source Software Developers," *Cultural Anthropology* 24, no. 3 (2009): 420–54; E. G. Coleman and A. Golub, "Hacker Practice: Moral Genres and the Cultural Articulation of Liberalism," *Anthropological Theory* 8, no. 3 (2008): 255–77; J. Leach, D. Nafus, and B. Krieger, "Freedom Imagined: Morality and Aesthetics in Open Source Software Design," *Ethnos* 74, no. 1 (2009): 51–71.

20. Anne Barron, "Free Software Production as Critical Social Practice," *Economy and Society* 42, no. 4 (2013): 597–625.

ment tradition treat free software as the technical infrastructure of a rising “recursive public,”<sup>21</sup> while others illuminate its use by governments to fortify surveillance<sup>22</sup>—a territory autonomous of the dominant logic of commodity circulation clearly expands with the growth of electronic technologies.<sup>23</sup>

The distinct status of creativity and its intimate relationship to “cultures of the copy,”<sup>24</sup> themselves diverse and intricate, have also recently been a center of interdisciplinary work focused on mimesis in cultural and historical perspectives, effectively highlighting the value of free copying and the importance of the copy to human development.<sup>25</sup> Innovation is central to contemporary capitalism, and many believe that it is supported by the exclusive right of ownership over the intellectual product: to borrow from Raustiala and Sprigman, “who is going to create if someone else is free to copy?”<sup>26</sup> Yet, historical studies and critical political economy strongly suggest that “pirating” has played an important role in the economic development of Western capitalism in the past and the emerging economies of the present.<sup>27</sup> Conversely, a handful of recent papers documents evidence that an overly stringent IP regime may hinder subsequent innovation: private genome-sequencing firm Celera and its IP enforcement, for instance, generated “significant reductions in subsequent scientific research and product development, on the order of 20–30 percent.”<sup>28</sup> Some even suggested that “overproptertisation” in the knowledge economy may have been a key cause of the

21. Christopher Kelty, *Two Bits: The Cultural Significance of Free Software* (Durham, NC: Duke University Press, 2008).

22. Evgeny Morozov, “How Dictators Watch Us on the Web,” *Prospect* 165 (2009), <http://www.prospectmagazine.co.uk/magazine/how-dictators-watch-us-on-the-web/#Uef1xtigYQo>; Elijah Saxon, “The Price of Free,” *Social Text*, 2009, [http://socialtextjournal.org/periscope\\_article/the\\_price\\_of\\_free\\_1](http://socialtextjournal.org/periscope_article/the_price_of_free_1).

23. Johan Söderberg, *Hacking Capitalism* (New York: Routledge, 2008).

24. Marcus Boon, *In Praise of Copying* (Cambridge, MA: Harvard University Press, 2010).

25. Mario Biagioli, Peter Jaszi, and Martha Woodmansee, eds., *Making and Unmaking Intellectual Property: Creative Production in Legal and Cultural Perspective* (Chicago: University of Chicago Press, 2011); Michael Carrier, *Innovation for the 21st Century* (Oxford: Oxford University Press, 2009); Laikwan Pang, *Creativity and Its Discontents* (Durham, NC: Duke University Press, 2012); Olga Sezneva, “Rethinking Copyright through the Copy in Russia,” *Journal of Cultural Economy* 6, no. 4 (2013): 472–87.

26. Kal Raustiala and Christopher Sprigman, *The Knockoff Economy: How Imitation Sparks Innovation* (New York: Oxford University Press, 2012), 7.

27. Linsu Kim and Richard Nelson, eds., *Technology, Learning, and Innovation: Experiences of Newly Industrializing Economies* (Cambridge: Cambridge University Press, 2000); Adrian Johns, *Piracy: The Intellectual Property Wars from Gutenberg to Gates* (Chicago: University of Chicago Press, 2009); Tristan Mattelart, “Audio-visual Piracy: Towards a Study of the Underground Networks of Cultural Globalization,” *Global Media and Communication* 5, no. 3 (2009): 308–26; Alexander Sebastian Dent, ed., “Piracy and Pirates Broadly Concealed,” special issue, *Anthropological Quarterly*, 85, no. 3 (2012).

28. Heidi L. Williams, “Intellectual Property Rights and Innovation: Evidence from the Human Genome,” *Journal of Political Economy* 212, no. 1 (2013): 2–27, quotation on 4.

recent financial meltdown.<sup>29</sup> Critics—from free-market supporters and opponents alike—now treat the relationship between proprietary regimes and the rate of innovation as more nuanced and less direct.<sup>30</sup>

The exponential extension of “patentability” and intellectual property rights simultaneously harms capital by slowing the rate of innovation and by siphoning more resources for unproductive legal expense.<sup>31</sup> Public and private spending on criminal enforcement of IP rights has reached unprecedented levels. The US Department of Justice reported approximately \$4.9 million in grants allocated to the newly created IP Task Force, but another estimate of the costs of implementing the PRO-IP Act (the PRO-IP Act also established the position of the Intellectual Property Enforcement Coordinator) from 2009 to 2013 reaches \$450 million.<sup>32</sup> The Industry Film Producers Association (now International Association of Audio Visual Communicators) had an estimated enforcement budget, according to CEO John Kennedy, of 75 million British pounds in 2009; the RIAA’s annual budget reaches \$45–\$55 million; and the MPAA’s antipiracy budget was described as around \$60–\$75 million per year. The 2008 Pro-IP (Priority Resources and Organization for IP) Act in the United States called for \$429 million in additional expenditures on enforcement between 2009 and 2013.<sup>33</sup> Abusive patent litigation has become such a festering problem, costing the American economy billions of dollars, that in June 2013 the White House proposed a promising reform to limit activities of “patent trolls”—firms that have no interest in creating products or services but use legal threats to induce others to pay them a licensing fee or to settle their suits.<sup>34</sup>

How, then, to approach the relationship between digitization and commodification so strongly mediated today by copyright and patent laws? What signifi-

29. Pagano and Rossi, “The Crash of the Knowledge Economy.”

30. Christopher J. Buccafusco and Christopher Jon Sprigman, “The Creativity Effect,” *University of Chicago Law Review* 78 (2011): 31–42; Richard Posner, “Transaction Costs and Antitrust Concerns in the Licensing of Intellectual Property,” *4 J. Marshall Review of Intellectual Property Law* (2005): 325.

31. Fabienne Orsi and Benjamin Coriat, “The New Role and Status of Intellectual Property Rights in Contemporary Capitalism,” *Competition & Change* 10, no. 2 (2006): 162–79; Charles Duhigg and Steve Lohr, “The Patent, Used as a Sword,” *New York Times*, October 7, 2012; Tyler Cowen, *Creative Destruction: How Globalization Changing the World’s Culture* (Princeton, NJ: Princeton University Press, 2006).

32. Information of this kind is notorious for being difficult to access and quickly outdated. The data we quote comes from IP Task Force PRO IP Act Annual Report FY2011, <http://www.justice.gov/dag/iptaskforce/proipact/doj-pro-ip-rpt2011.pdf>; and data posted by Annemarie Bridy, Associate Professor of Law, on IP-Enforcement Listserv, May 6, 2013.

33. Joe Karaganis, “Media Piracy in Emerging Economies,” report, Social Science Research Council, New York, 2011, <http://piracy.ssrc.org/about-the-report/>, pp. 19–20.

34. “FACT SHEET: White House Task Force on High-Tech Patent Issues,” <http://www.whitehouse.gov/the-press-office/2013/06/04/fact-sheet-white-house-task-force-high-tech-patent-issues>.



cance should one assign to this mediation for the future of the commodity form itself? In answering these questions we focus on key instantiations of the commodification process: digital media contents (music, movies, and computer software) restrained by both the Intellectual Property (IP) apparatus and by physical devices under the umbrella of Digital Rights Management (DRM); Genetic Use Restriction Technologies (GURTs) such as those developed by Monsanto and a few other agribusiness corporations; finally, commodity exchange and piracy on massively multiplayer online games (MMOs) such as *World of Warcraft* and *Aion: The Tower of Eternity*, social network games such as *Farmville* and *Chefville*, and virtual worlds such as *Second Life*.

Because of their own reality as distinct life-forms, some content matters have not lent themselves so easily to commodification. Although the recent case of media products suggests this might result from their intangibility, the same problem has concerned grain—a fairly tangible life-form—for centuries: seeds have long been reproduced from one season to the next without the intermediation of the market.<sup>35</sup> Similarly, with the right equipment, an MP3 track can be copied without loss of quality to another computer or an optical disk. Both types of content matter overflow the commodity form not because of their intangibility but because of their physical constitution as life-forms that can be (self-)reproduced outside the circuits of capital valorization. Eminently material life-forms that can self-replicate pose as acute a challenge to commodification as immaterial goods: this was recently illustrated by the noncorporate development of the first “RepRap” 3D printers, which can not only manufacture a whole range of material goods with appropriate programs but can also produce an increasing share of their own component parts, owing them the name of “3D printers that print themselves.”<sup>36</sup>

Rather than immateriality or virtuality, our inquiry thus centers on the juridical-political ecologies of reproducibility. In order to better understand why such focus is more productive, let us consider the following examples. It is far more difficult to control the instantaneous reproduction of an (always physically inscribed) MP3

35. Jack Kloppenburg, *First the Seed: The Political Economy of Plant Biotechnology*, 2nd ed. (Madison: University of Wisconsin Press, 2005).

36. Simon Bradshaw, Adrian Bowyer, and Patrick Haufe, “The Intellectual Property Implications of Low-cost 3D Printing,” *ScriptEd* 7, no. 1 (2010): 5–31; Johan Söderberg and Daoud Adel, “Atoms Want to Be Free Too! Expanding the Critique of Intellectual Property to Physical Goods,” *tripleC* 10, no. 1 (2012): 66–76. In January 2012, the famous file-sharing website The Pirate Bay created the category “physibles” to offer 3D printer files of physical objects.

file in the twenty-first century than it was for the sale of a Ford Model T in the twentieth century—obviously a tangible good—but also than the reproduction of a (pretty intangible) concert performance in the nineteenth century. In the cases of both Model T and the live nineteenth-century concert, the boundaries of the commodity form were directly embedded within the physicality of the commodity object, which could not be reproduced at a lower cost independently of the owners of the original means of production. Legal property protections symbolized by patents came as secondary extensions of the commodity rather than as intrinsic conditions of its valorization. In contrast, today's digitized contents do not carry commodity boundaries with the same apparent naturalness. And yet, contrary to common beliefs about "virtual" economies, their overflowing capacities do not come from their intangibility pure and simple but rather from the peculiar mode of their tangible inscription. Certain types of intangibility associated with services such as a concert performance before the era of recorders made commodification easy by rendering self-reproduction impossible: in its purest form, you can't copy a service.<sup>37</sup> Conversely other types of materiality (from that of grain to that of 3D printing) allow processes of self-replication that threaten the commodity form as a social container.

As it happens, the forcible containment of new content matter—both new goods and new services—into the commodity form has involved a refinement of juridical and physical technologies, which we describe as prostheses. Although we use the notion of "prosthesis" in a sense not unlike its recent deployments in the Social Studies of Finance,<sup>38</sup> our analysis differs from the latter in two respects. First, at the empirical level, the technologies we describe are ostensibly developed to maintain and safeguard the commodity form in the context of a *changing* environment generated by capitalism's own development: the form has not changed—content has. In our case, prosthetics are not just there to manage a static handicap but to adapt to environmental mutations in order for a particular sociotechnical artifact (the commodity) to perdure. Second, as a result, we do

37. François Fourquet even argued that the pure commodity is always, in the last analysis, an immaterial service, even when this service is incorporated into physical objects ("Critique de la raison cognitive," 272–73).

38. Koray Caliskan, *Market Threads: How Cotton Farmers and Traders Create a Global Commodity*, (Princeton, NJ: Princeton University Press, 2010); Michel Callon, "Economic Markets and the Rise of Interactive *Agencements*: From Prosthetic Agencies to Habilitated Agencies," in *Living in a Material World: Economic Sociology Meets Science and Technology Studies*, ed. Trevor Pinch and Richard Swedberg (Cambridge, MA: MIT Press, 2008), 27–56.

not call for “habilitation” policies<sup>39</sup> that, for example, would impose changes in content matter better fitted to the requirements of the commodity form. Instead, we highlight the dialectic process by which capitalist commodification expands its frontiers to content matter that challenges capitalist commodification in return. We will argue that, although this challenge is in part met by increasingly elaborate prosthetic technologies, prosthetic swelling appears to generate ideological vulnerability and can be seen as an indicator of historical obsolescence. Our critical-historical inquiry into the new physical prosthetics of the commodity form thus allows us to raise anew the question of the alleged virtualization of capitalism.<sup>40</sup>

## II. IP AS JURIDICAL PROSTHETICS

Media goods, the conventional media economics tell us, have two key characteristics: they are of intangible nature and do not diminish from use.<sup>41</sup> How are this intangibility and sustained use resolved and manipulated in the circulation of media as commodities? The digital inscription through which a song, a movie, or a video game exists has its own distinct impact on the media object, offering definitive advantages to industries, but also a few disadvantages. Digitized content displays unprecedented velocity, making possible quasi-instantaneous transmission from one geographic location to another without loss of quality. Traditional delivery and service costs can be eliminated. Furthermore, digital content is “liquid”; it appears in different packaging—cassette, optical disc, media file, but also ring tone, and so on. This changeability of the medium qua physicality presents great advantages. Among recording industries in the United States since the 1940s, a key method of profit generation has consisted in changing physical embodiments (from vinyl to cassette to file encryption) and playback equipment. The constant—the key object to control—here has been the switching board: copyright. Recycling and repackaging studios’ catalogs—bringing on new products and new sales—has been generating profits ad infinitum even as the initial medium is progressively devalued by advances in technology.

39. Callon, “Economic Markets,” 42.

40. Our argument requires reiterating the classic distinction between the materiality of physics and the materiality of praxis: as distinct from commodity objects, the commodity form has always been “immaterial” in the former sense and “material” in the latter. Thus we chose to use words such as “physical” and “tangible” to refer to properties of both content matter and commodification technologies, so as to distinguish physicality from the broader materiality of social relations.

41. Gillian Doyle, *Media Ownership: The Economics and Politics of Convergence and Concentration in the UK and European Media* (New York: SAGE, 2002).

However, liquidity also poses a challenge: media contents “bleed,”<sup>42</sup> seeping from one realm of life into another. Just think of the sound and image landscapes of contemporary cities, that of a song escaping from a car into the street or, better, the background music in a store, licensed and paid to be played a certain number of times, spilling onto the sidewalk to provide passersby with entertainment. Similarly, they “bleed” out of the zone of industries’ control and are appropriated and transmitted around with minor or no distortion. The majority of pirated DVDs in the world, for example, are produced “above-quota” at licensed factories. This occurs when a plant, equipped with licensed technology and a cleared copyright for a given commodity produces extras: an extra 500,000 copies on top of the contractually authorized 500,000 are made during lunch break or after regular hours. Capital-investment and technological requirements at this level are high, and so are the quality standards making the pirated goods indistinguishable from the legal ones. The pirated stock is a spillover afforded by the nature of the matter at hand. Take another example of media liquidity: the hijacking of satellite signals. When French satellite packages moved from analog to digital in the mid-1990s, unauthorized neighborhood businesses in Algeria sold magnetic cards for decoding encrypted programs on satellite.<sup>43</sup> A similar service was available to cable subscribers in Russian-immigrant neighborhoods of New York and Chicago who wished to intercept a Russian-language programming for free. “Bleeding” threatens the commodity status of media content.

Optical disks (CDs and DVDs) have been losing their position in the legal and illegal markets to Internet downloading, streaming services like Spotify or Pandora, and on-demand TV. Since 2003–2005, there has been a major shift in the structure of cultural goods consumption in which digital contents increasingly circulate as files and torrents. Music streaming via radio broadcasts began in the mid-1990s, and archive-based services like Pandora date back to 2000, but the use of such services has grown rapidly in recent years as cheap devices and higher bandwidth connections have proliferated. In the assessment of some researchers, music- and movie-streaming services significantly undermined the traditional forms of piracy, securing the advantage of legitimate industries.

However, the rise of streaming and downloading as alternatives to optical disks should not be overstated globally, as it has taken unequal paces even among wealthy countries. For example, although CD collections in Germany and the United States are of comparable size, a study conducted by Karaganis and

42. Ravi Sundaram, *Pirate Modernity: Delhi's Media Urbanism*, 1st ed. (London: Taylor & Francis, 2009).

43. Mekhaldi quoted in Mattelart, “Audio-visual Piracy,” 317.

Renkema reports that average and especially median digital music file collections are significantly larger in the United States. "Adoption of streaming services is also much more prevalent in the United States. Thirteen percent of Americans listen to most or all of their music via streaming services, and only 2% of Germans do. Seven percent of Americans have paid subscriptions to streaming music services, compared to 1% of Germans. Spotify—king of streaming services in neighboring Sweden—launched in Germany only in March 2012."<sup>44</sup> Furthermore, streaming is contingent on the existence of a whole transmission infrastructure and thus limited to the global industrial core and select urban areas outside it, where bandwidth is noticeably improving. In 2011, for instance, Blu-ray disc sales were still growing, suggesting that for higher resolution content it is handier to run to the store and get a disc than wait hours for a download. For the foreseeable future, media storage on removable physical support is likely to remain more convenient and cost-effective, especially when it comes to very high resolution or the lower-tech global periphery.<sup>45</sup>

Notably, these national and regional variations do not illustrate contrasts in levels of virtualization but rather different circuits of material inscription involved in the digitization of commercial media content. The intangible acquires diverse forms of material mediation as it circulates. Each mode of materialization presents risks for capital valorization as each threatens content containment in its own way. Indeed, the containment of digital content is the condition of its valorization. If digital contents offer definitive gains when they circulate commodities, their "spillover" easily devalues this form of existence from the vantage point of capital accumulation. As we know, streaming technologies themselves spurred numbers of quasi-legal, semilegal, and outright illegal websites. Such growth has significantly complicated enforcement efforts and called for more dynamic legal and commercial apparatuses. Enlisting the voluntary cooperation of Internet service providers (ISPs) to monitor their subscribers for copyright infringing behavior, or the implementation of a three-(in some cases six-)strike approach, enjoyed cool and, at times, outright critical reception.<sup>46</sup>

44. Joe Karaganis and Lennart Renkema, *Copy Culture in the US and Germany* (New York: The American Assembly, Columbia University, 2013), accessible at <http://americanassembly.org/sites/americanassembly.org/files/download/project/copy-culture.pdf>.

45. Tom Coughlin, "What Is the Future of Optical Disk Technology and Who Will Use It?," *Forbes* July 18, 2011, <http://www.forbes.com/sites/tomcoughlin/2011/07/18/what-is-the-future-of-optical-disc-technology-and-who-will-use-it>.

46. Adrienne Muir, "Online Copyright Enforcement by Internet Service Providers," *Journal of Information Science* 39, no. 2 (2013): 256–69.

It is in this context that we witness the international consolidation of what once was a discrepant body of legislative acts and institutions into large-scale conglomerates composed of domestic and foreign parties, public and private agencies, and public and private resources—to the extent that it can be described as institutional swelling. International treaties undergo revisions and expansions and change institutional homes (from the World Trade Organization to bilateral agreements, for example) in search of effective enforcement. The US Trade Representative annual Special 301 reports weigh individual country compliance with IP and enforcement standards. Reporting on compliance in itself has involved the creation of a series of research agencies (and lucrative businesses) that have typically been aligned with specific industries (such as the Recording Industry Association of America [RIAA], the Motion Picture Association of America [MPA], or the Business Software Association [BSA]). Enforcement budgets are difficult to determine, especially when it comes to industries' operations in developing countries, but as we indicated earlier, published data suggest an estimate in the low hundreds of millions of dollars per year for the top-level industry groups. Thus, the last two decades have witnessed an explosion of institutional networks, legislative acts, and repertoires of enforcement action internationally. Insofar as IP laws, policies, and institutions operate as sociojuridical codes and networks of commodity enclosure,<sup>47</sup> they represent what we call here institutional prosthetics.

### III. THE NEW PHYSICAL PROSTHETICS OF COMMODIFICATION: DRM TECHNOLOGIES, GURTs, AND BEYOND

Media and entertainment industries have intensified their attempts to close any gaps that were not covered by institutional containment measures. They have moved to include antipiracy technologies in all software and hardware that process digital entertainment content<sup>48</sup> and have invested millions of dollars into technologies to prevent infringement during public screenings and concerts. The early days of antipiracy, the 1990s to early 2000s, witnessed efforts to prevent bootlegging by installing camcorder detectors in movie theaters—a tamper-resistant device that uses brief bursts of energy to detect camera lenses and digital sensors. Today's tech blogs discuss studio-controlled satellites "beaming" contents from one centralized location to movie halls worldwide—purporting to make

47. Christopher May, "The Denial of History: Reification, Intellectual Property Rights and the Lessons of the Past," *Capital & Class* 30, no. 1 (2006): 33–56.

48. David A. Cook and Wenli Wang, "Neutralizing the Piracy of Motion Pictures: Reengineering the Industry's Supply Chain," *Technology in Society* 26, no. 4 (November 2004): 567–583.

movies fit better into the commodity form by turning them into one-time intangible services.

Controversial and not universally accepted, DRM systems have been on the rise since the late 1990s. Digital rights management is an umbrella term that refers to any technology that controls access to copyrighted material from “within.” Region codes are among earlier instances of such technology operating to monitor the geographic circulation of optical disks. Encrypted with regional codes, CD/DVDs are suitable to be played only on the equipment labeled for operation within a specific geographical region of the world. Other restrictive measures are also in effect. Earlier in the 2000s, Sony BMG released selected CDs with a DRM system that limited consumers to making three copies of the CD. In 2005, the same company released XCP (another DRM technology), which would install software on consumers’ PCs to control and monitor the use of content—without the knowledge of the consumer.<sup>49</sup> A watermark tells the playback device how to play the content, and how many copying acts to allow. Encrypted smart-card technology with a tamper-proof chip stores the cardholder’s information used for future verification. Much of this effort to monitor goes for advertising purposes, and IP rights monitoring remains more complicated, in part because some file-sharing technologies such as P2P networks are easy to survey, whereas others, such as direct download sites, are much harder. Critics also pointed out the ways in which DRM systems approximate “spyware,” because in order to be effective they have to be hidden from the user and compromise the computer’s security more generally.<sup>50</sup> Music industries have given up on DRM for downloadable files, but other industries continue to use it, although in less intrusive versions.

These examples are enough to demonstrate that institutional and juridical networks of containment alone are judged unable to circumscribe digital environments within the commodity form. Thus, copyright interventions implant codes in the material body of the commodity object to control its circulation. Camera detectors and DRM devices function as technological prostheses, either external or internal to the content matter itself. They are extensions of juridical and institutional devices of content containment; as such, they signal a pros-

49. INDICARE, *Consumer's Guide to Digital Rights Management*, report, 2011, [http://www.indicare.org/tiki-view\\_articles.php](http://www.indicare.org/tiki-view_articles.php).

50. Corey Doctorow, “Even If We Win the Right to Own and Control Our Computers, a Dilemma Remains: What Rights Do Owners Owe Users?,” transcript of the notes from talk delivered at Google in August 2012, and for The Long Now Foundation in July 2012, <http://boingboing.net/2012/08/23/civilwar.html>.

thetic physicalization of the commodity. Perhaps nowhere is this operation so extreme as in the case of Monsanto grain.

\* \* \*

On March 3, 1998, in collaboration with the Agricultural Research Service of the United States Department of Agriculture, Delta and Pine Land Company obtained US patent 5,723,765 on a genetically engineered seed by the name of "Control of Plant Gene Expression" (the initial patent had been filed in 1995). Later nicknamed "Terminator," the seed grows into a sterile plant, so that farmers using it would no longer be technically able to save seeds for the ensuing year. Instead, they would have to go back to the producer of the seed. This would be repeated year after year.

Since the beginning of agriculture, farmers had been able to replant their own seeds in order to produce new crops. However, the development of public- and private-sector breeding innovations from the late nineteenth century on led the US Congress to pass the Townsend-Purnell Patent Act, also known as the Plant Protection Act (PPA). The PPA authorized patenting for asexually propagated plants (such as fruit and nut trees). It was complemented in 1970 by the Plant Variety Protection Act (PVPA). The new law granted patent rights to breeders of plants reproduced by seeds, although with two exceptions: it still authorized researchers to use patented seeds in order to develop new varieties; it also allowed farmers to save seeds for their own use. A farmer could sell those seeds to another one, up to the amount he could have replanted the next year.

This started changing in the early 1990s with the commercialization of the first genetically modified (GM) seed. In 1980, the Supreme Court had already found in *Diamond v. Chakrabarty* that a GM organism could be patented. As developing GM seeds required heavy financial and human investment, patenting was intended to protect such investment against what the US Department of Agriculture later called "unauthorized regeneration."<sup>51</sup> Going further than federal law, agritech firms developing GM seeds such as Monsanto have also required that farmers sign a "technology agreement"—also dubbed "Terminator clause"—by which they commit not to save any seeds resulting from their GM crop. Policing this clause is complex, however, as "seed developers must send agents out into

51. Samantha M. Ohlgart, "Terminator Gene: Intellectual Property Rights vs. the Farmers' Common Law Right to Save Seed," *Drake Journal of Agricultural Law* 7 (2002): 473–92, quotation on 484.



farmers' fields to sample crops, looking for unlicensed users of proprietary seed. When such uses are found, costly legal procedures may be necessary to halt the use, force acceptance of a license, or recover unpaid royalties."<sup>52</sup>

Bringing the "self-policing" logic one step further, the new "genetically engineered suicide mechanism"<sup>53</sup> developed in the late 1990s involves the programmed self-poisoning of the seed. In effect, it allows the legal limitation of the patent to be inscribed in the genetic code of the plant itself.<sup>54</sup> The "terminator gene" radicalized older forms of containment and sterilization such as the hybridization technique invented in 1908 by George Shull, which represented but one example of the "application of science to the problem of commodifying the seed."<sup>55</sup> Until this technology was invented, "seeds failed to become a pure commodity because exchange of the seed also transferred the means of production."<sup>56</sup> Indeed, "at least in the case of self-pollinating plants, seeds reproduce on their own accord."<sup>57</sup> With hybridization, farmers had to go get a new cargo of seed each year, as hybrids would produce lower-quality seed at the next generation. Compared with hybridization, the terminator technology has significantly increased the scope of corporate control over free reproduction: a switch activates toxin production within the seed in the latest stages of seed maturation, allowing the production of mature and usable seeds while preventing use of the seed as capital.

The new mechanism of the "self-policing seed" reduces the possibilities of patent violation entailed in the recourse to mere juridical forms of containment, or to private policing including that by Pinkerton detectives.<sup>58</sup> Genetic Use Restriction Technologies have elicited new interest by agribusiness for nonhybridized seeds such as rice or wheat, which they had left out until now because their free

52. Dan L. Burk, "Legal Constraint of Genetic Use Restrictions Technologies," *Minnesota Journal of Law, Science & Technology* 6 (2004): 335–59, quotation on 339.

53. Ohlgart, "Terminator Gene," 476.

54. Dan L. Burk, "DNA Rules: Legal and Conceptual Implications of Biological Lock-out Systems," *California Law Review* 92, no. 6 (2004): 1553–58.

55. Kloppenburg, *First the Seed*, 280.

56. Keith Aoki, "Weeds, Seeds and Deeds: Recent Skirmishes in the Seed Wars," *Cardozo Journal of International and Comparative Law* 11 (2003): 247, and "Malthus, Mendel, and Monsanto: Intellectual Property and the Law and Politics of Global Food Supply: An Introduction," *Journal of Environmental Law and Litigation* 19 (2004): 397.

57. Jim Chen, "The Parable of the Seeds: Interpreting the Plant Variety Protection Act in Furtherance of Innovation Policy," *Notre Dame Law Review* 81, no. 4 (2005): 1–51, quotation on 6.

58. Ricardo Steinbrechter and Pat Roy Mooney, "Terminator Technology: The Threat to World Food Security," *Ecologist* 28, no. 5 (1998): 18–32.

physical reproduction could not be prevented. With the embedded Terminator technology, “technical standards become a kind of law,”<sup>59</sup> allowing a corporation to hold a “biological monopoly”<sup>60</sup> over plants it sells. As it happens, GURT-induced restrictions may potentially extend the monopoly beyond the limits set by patent law.<sup>61</sup> First, it prevents saving and reseeded, which was authorized under PVPA. Second, it can generate the technological version of a perpetual patent, when the 1991 Act of the International Convention for the Protection of New Varieties of Plants sets a time limit of 20 years on a breeder’s exclusive rights.

Various innovations include the possibility of selling a proprietary chemical “password” that could reverse the switch and avoid toxin production, thus allowing the grain to remain fertile—but only for one more generation, after which a new dose of the commercialized chemical would need to be administered. Another version of the switch mechanism would allow the chemical triggering of different kinds of product properties (resistance against pest, drought, etc.) depending on the options purchased by the farmer (genetic trait control, or T-GURT, sometimes nicknamed “traitor” technology). By allowing certain engineered genetic traits to be switched on and off by a commercialized chemical, “traitor” technologies would represent the latest refinement in biotechnological enclosure.

Since the early 2000s, the world has witnessed a dramatic increase in the patenting of organic agricultural articles. This contributed to the solidification of a global oligopoly: in 2009, 85 percent of transgenic corn patents were concentrated in the top three seed firms Monsanto, DuPont, and Syngenta.<sup>62</sup> In 2012, the latter controlled 53 percent of the global commercial seed market. Ninety-three percent of soybeans and 86 percent of corn in the United States came from patented, genetically engineered seeds.<sup>63</sup>

Non-governmental organizations (NGOs), farmers, and various scientific bodies denounced the potentially harmful effect of GURTs on over one billion peasants around the world, whose survival rests on the economic tradition of saving

59. Burk, “Legal Constraint of Genetic Use Restrictions Technologies,” 341.

60. Hope Shand, “New Enclosures: Why Civil Society and Governments Need to Look beyond Life Patenting,” *CR: The New Centennial Review* 3, no. 2 (2003): 187–204, quotation on 192.

61. Burk, “Legal Constraint of Genetic Use Restrictions Technologies,” 343.

62. Economics and Statistics Administration and United States Trademark and Patent Office, U.S. Department of Commerce, “Intellectual Property and the U.S. Economy: Industries in Focus,” report, prepared by March 2012, [http://www.uspto.gov/news/publications/IP\\_Report\\_March\\_2012.pdf](http://www.uspto.gov/news/publications/IP_Report_March_2012.pdf).

63. Center for Food Safety, “Seed Giants vs. U.S. Farmers,” February 13, 2013, <http://www.centerforfoodsafety.org/reports/1770/seed-giants-vs-us-farmers>.

and breeding seeds every year. In fact, a number of countries including India (October 1998), Brazil, Ghana (January 2000), and Uganda have declared opposition to GURTs, or voted laws prohibiting them. However, other countries such as Australia, Canada, New Zealand, and the United States approved the technology and encouraged continued research on it. In an October 1999 letter to the Rockefeller Foundation, Monsanto's CEO officially announced the firm's "commitment not to commercialize sterile seed technologies." If Monsanto abandoned GURT itself, it has continued to research equivalent "traitor" technologies. Novartis, AstraZeneca, Pioneer Hi-Bred, Rhone Poulenc, and DuPont have been among companies developing variants of GURT. The USDA and Pine Land Company have jointly filed three Terminator patents in total (1998, 1999, 2001), and have also applied for patents in at least 78 other countries. For a key analyst of these developments, "continued research and continued commercial interest in its application suggest that it is a question of when, not whether, the technology will be deployed."<sup>64</sup> AstraZeneca has already conducted field trials on genetic trait control technology in the United Kingdom. In 2004, Syngenta obtained a patent (US Patent 6,700,039) on a technology to develop potato seeds that would become sterile unless treated with chemicals.

A recent US Supreme Court decision suggests biotechnological firms can still successfully commodify their product through juridical means. In *Bowman v. Monsanto Company* (No. 11–796, May 13, 2013), the court found that Vernon Hughes Bowman, an Indiana farmer, could not plant and harvest copies of Monsanto's "Round-up resistant" soybeans and condemned Bowman to a significant fine. Yet, even though the commercialization of the original Terminator seed has been abandoned globally since the early 2000s, and its overall deployment restrained or made less urgent in the Global North by increasingly corporate-friendly legal decisions, the biotechnological potential it represents for capital and the commodity form remains key in the event that these juridical protections should one day turn insufficient.

#### IV. IDEOLOGICAL VULNERABILITY AND THE PRECARIOUS DYNAMICS OF PHYSICAL INSCRIPTION

In spite of its obvious economic potential for capitalist valorization, the development of GURT and DRM technologies carries ambiguous implications for the success and completeness of commodification, in both its ideological and physical

64. Burk, "Legal Constraint of Genetic Use Restrictions Technologies," 334.

dimensions. Let us start with ideology. Successful commodification requires not only the effective containment of content matter but also societal belief in the ontological identity between form and content: commodity fetishism implies the mystified perception of commodity objects as self-containing. In this respect, new content-containment technologies may seem to bring the commodity form one more step toward defetishization. Indeed, even more than with the swelling of purely legal containment, technological containment betrays the artifactuality of the commodity as a historically arbitrary form. As the labor of containment becomes more intense and more technologically mediated, and as it entails more and more sophisticated modifications of content matter, it gradually loses its ideological naturalness. The institutional form can no longer appear as one and the same with the content it enwraps and constrains or as naturally emanating from it.

On the other hand, the forcible inscription of legal restraints into the objectivity of things, software, and genes may come to function as the ideological antidote to the risks of defetishization entailed by the institutional swelling of the IP regime. While it could be read as the ultimate stage of self-betrayal in the artificial imposition of an external form, quantitatively limiting the satisfaction of needs for profit-making purposes, it may equally appear as a cunning of commodity fetishism, through which the illusion of naturalness would be allowed to reiterate itself by projecting itself onto technologically modified objectivity. When modification involves internalization, when it touches on genes and other biological fetishes as in the case of GURTs, the ideological stabilization of the commodity may prove even more powerful.

It is ironic that new vulnerabilities posed by the rise of technological containment may not come so much from its ideological implications as from its very recourse to physical mediation. The fact that physicality poses a problem to commodification has been part and parcel of the political history of the commodity. This is true of the seed itself, whose self-reproducing materiality has “only grudgingly and incompletely assumed the commodity form.”<sup>65</sup> But it is also true in the sense that any physical materialization of the commodity provides a handle for its malleability and manipulability.

Media goods have illustrated this paradox in an original way: their physical inscription, rather than their supposed immaterial nature, has been the source of their free reproducibility without capitalist mediation and thus without value

65. Aoki, “Weeds, Seeds and Deeds,” 250.

extraction. The physical medium, not the intangible content, has allowed the copy. Physical mediation is at the same time a condition of possibility of commodity circulation and an Achilles' heel for the commodity form: this paradox seems to extend to the new material prosthetics of commodification in the form of DRM and GURTs. Because DRM and GURTs incorporate law into the physical, they may also extend physical manipulability to law itself: Anti-copy devices are to be tampered with. DVD players are to be "de-zoned." Region-free DVD players may be commercially sold. DRM technologies are to be cracked. If a suicidal seed can only be saved (and replanted) by being administered a chemical antidepressant antidote, then the antidote can be copied, its formula stolen or replaced by a generic version.

## V. THE CODE OF THE GAME

In the examples given until now, the commodity still appeared as the external imposition of an institutional form on a given content, either as juridical, electronic, genetic, or chemical codes. In these cases, commodification is tantamount to modification. Its physical prostheses come to transform matter after their own image. However, we saw that even physical restrictions left possibilities for hijacking—stealing the chemical "password" to reproduction, for example. In fact, they sometimes provide the means of access to it. This is because the material space of content use, valorization, and circulation is not itself entirely controllable by the corporation or entity that commercializes the product. Most of the time, this space will be the world itself (provided there is, somewhere, some electricity, or some Internet access, in the case of media goods). By resorting to physical containment devices, both DRM and GURTs risk reproducing the same material vulnerabilities that the IP regime was devised to contain: material prosthetics reintroduce matter, and thus the risk of free life without capital accumulation.

Massively multiplayer online games, social network games, and virtual universes more generally possess different properties. Their "synthetic worlds"<sup>66</sup> stand out as life-forms that are one and the same with the computer code. *Second Life*, for example, a major virtual world created in the early 2000s by Linden Lab, is a 3D online simulation system boasting 1 million visits monthly, with 36 million accounts created during its first 10 years of existence (2003–13).<sup>67</sup> In

66. Edward Castronova, *Synthetic Worlds: The Business and Culture of Online Games* (Chicago: University of Chicago Press, 2005).

67. Chris Stokel-Walker, "Second Life's Strange Second Life," *The Verge*, September 24, 2013, <http://www.theverge.com/2013/9/24/4698382/second-lifes-strange-second-life>.

*Second Life*, a player assumes the form of an avatar, an online persona that is a digital object and the graphic user interface in the synthetic world. The avatar interacts with others through messaging, buys property, builds buildings, owns shops, attends parties, and much more. To get there, a piece of software is downloaded for free. Just wandering around costs nothing, but obtaining an appearance, clothes, a home, and meeting people requires buying local currency—the Linden—which can be exchanged for dollars, euros, and other real-life currencies.<sup>68</sup>

Although boundaries between categories are sometimes thin, MMOs and social network games usually differ from more generic virtual worlds by having a more narrative-rich environment that proposes specific quests and other scripted competitive endeavors within which their participants are to make progress within the space of the game. Examples of MMOs include the leading *World of Warcraft* (7.5 million subscribers in August 2013) and *Aion: The Tower of Eternity* (2.5 million subscribers in 2013), while *Farmville 2* (40 million monthly active users in 2012) and *Chefville* (45 million) are popular Facebook-mediated “social network games,” in which Facebook takes 30 percent of each transaction in “Facebook credits.” Although commercial MMOs have long been subscription based, they are increasingly turning to free access, their corporate owners making the most of their profits from the in-world sale of virtual goods (e.g., weapons for users to better succeed in the game or to reach another level) through “microtransactions.” This has made the protection of virtual purchases all the more crucial.

Boundaries between the real and the virtual world are not as clear as they might appear. Objects that are traded by avatars may be computer codes, but the value generated by these transactions, as well as the transactions themselves, take place in the real world—of which the virtual world is part. In 2010, a man bought a space station in the world *Project Entropia* for almost \$350,000.<sup>69</sup> In 10 years, transactions among users for virtual goods in *Second Life* totaled \$3.2 billion, for 1.2 million transactions daily in 2013.<sup>70</sup> Not surprisingly therefore, “real life” companies have increased their presence in MMOs. In its heyday, *Second Life* attracted American Apparel, Adidas, and IBM, which opened

68. Tom Boellstorff, *Coming of Age in Second Life: An Anthropologist Explores the Virtually Human* (Princeton, NJ: Princeton University Press, 2008).

69. Wayne Rumbles, “Theft in the Digital: Can You Steal Virtual Property?,” *Canterbury Law Review* 17 (2011): 354–74, quotation on 360.

70. “Second Life Celebrates 10-Year Anniversary,” Press Release Archive, Linden Lab, <http://lindenlab.com/releases/second-life-celebrates-10-year-anniversary>.

their shops in it; banks financed their operations, including Wells Fargo and BCV, one of Switzerland's biggest regional banks. This happened in many other popular worlds as well. Ten years ago, Nike and Levi Strauss entered into licensing agreements with the company There.com which runs the virtual world *There*. They promote their real clothing through the sale of its virtual renditions, although sales of the virtual equivalents constitute real financial transactions.<sup>71</sup> In *Second Life*, app developers deliberately bridged worlds by affording avatars with the ability to send text messages to telephones in the "real" world, or to run shops that sell real goods. With the help from the app XXFruit, an avatar can send flowers and chocolate to another avatar by paying with the Linden money: the owner of the receiving avatar will enter her real-life address to receive the real-life flowers. All these games' currencies have specific conversion rates, although many are reported to be arbitrary. According to Newzoo's Global Games Market Report, MMO revenues will grow to \$70.4 billion worldwide in 2013, representing a 6 percent year-on-year increase. The number of gamers is expected to surpass 1.2 billion by the end of the year.<sup>72</sup>

Massively multiplayer online games and virtual goods are interesting for our discussion as they appear to exclude the very possibility of illegal appropriation: IP theft is written out, quite literally, at the level of the game code. Because it never relinquishes control over use, the space of the game seems to be the space of valorization par excellence. If GURTs and DRM simply materialize the legal commodity into a program code, MMOs go further by making the code law the very space within which the commodity is used. Not only is the juridical encoded, but that which is encoded takes on the function of law within the universe of the MMO. This is not just in the sense that players would believe in those internal rules more than in real-life law, which occasionally happens,<sup>73</sup> but in a more radical sense that the rules of the game here take on the materiality of the laws of physics.

Theoretically, content containment could thus be coded to perfection. Once purchased, it appears that virtual goods could not be used in an illegitimate manner, simply because those uses would not be programmed into the game's

71. Gregory Lastowka and Dan Hunter, "The Laws of the Virtual Worlds," *California Law Review* 92, no. 1 (2004): 1–73; Walker quoted *ibid.*, 10.

72. "Newzoo Announces New Report: Global Games Market to Grow 6% to \$70.4bn in 2013," Newzoo: Market Research and Consultancy Firm, <http://www.newzoo.com/press-releases/newzoo-announces-new-report-and-projects-global-games-market-to-grow-6-to-70-4bn-in-2013/#FTYtxMXmv4P2F5kz.99>.

73. Lastowka and Hunter, "Laws," 12.

code. Commodities could not be stolen or illegally copied: neither within the game, where those acts would be materially impossible, nor outside, where their use value would be null. *World of Warcraft* weapons cannot be used in robbing the next door video shop because they are only realized within the space of the game, which is controlled by Blizzard Entertainment. Massively multiplayer on-line games thus seem to solve the real-world dilemma of value realization, according to which the sale of a commodity also gives away the means of reproducing it and thus undermines its containability. With MMOs, the space of valorization itself has become copyrighted, structurally closing the loop of value realization. While GURTs and DRMs always run the risk that physical containment be unmade after content purchase, MMOs extend containment to the very space in which the value of commodities can be actualized. Instead of being incorporated into physicality, the commodity form gets cosmologized into the space of the game, simultaneously becoming world matter *and* law. In such a utopian model, there seems to be no outside.

However, even this mode of enclosure is far from total. Although content containment through “cosmic closure” has largely proved a successful—if marginal—strategy, it also encountered limits in the form of digital theft and other kinds of virtual crime. Theft can happen through out-world interactions, as when someone hacks a user’s account in their bedroom and sells their virtual assets either directly within the game (if such transactions are authorized) or through an out-world exchange platform (in which case the operation will appear as a gift within the game).<sup>74</sup> A handful of games based on “permissive worlds”<sup>75</sup> also allow for in-world theft. This is the case with the game *Eve Online*, whose “Buyer Beware” policy permits skullduggery, cons, racketeering, and other immoral practices—a problem when in-game currency assets are worth real out-world money. In 2010, a player managed to take over in-world investment company Titans4U and then stole the entire reserves of the company in *Eve Online* currency (the InterStellar Kredit, or ISK), equaling \$45,000. The theft did not go against the rules of the game. Given the threat of “Buyer Beware” policies for online business in worlds increasingly based on microtransactions rather than on subscription, one can predict it will remain marginal. Borderline criminality has also famously included the practice of “goldfarming,” by which individuals or entire factories (especially in the Global South) play games all day long with the

74. Rumbles, “Theft in the Digital: Can You Steal Virtual Property?,” 365.

75. *Ibid.*, 371.



sole purpose of accumulating in-world goods (including special powers) in order to sell them for real money to wealthier or impatient users. Although goldfarming is technically prohibited by most MMOs' end-user license agreements, it is very hard to police in reality—indeed, it is almost impossible to figure out the actual out-world provisions of a transfer of goods in-world, which may obey many legitimate nonlucrative purposes such as building a team for an upcoming collective quest.

Yet a more crucial loophole for the reflection in this paper is the case of illegal copying. Although *Second Life's* server and client software incorporated DRM technology, unauthorized copying occurs—and can be prosecuted under the Digital Millennium Copyright Act (DMCA). In the mid-2000s, a much-loathed software program named CopyBot allowed objects to be cloned at no cost and thus to be pirated.<sup>76</sup> When initially developed in 2006, CopyBot was a debugging tool with no malicious purpose, until it came to be used by some as a program to copy the code of virtual goods sold (or tried, or consulted) in *Second Life*. The significance of this controversy goes far beyond the particular case of the Copybot software, as it points to a major vulnerability of virtual goods: accessing them always implies an amount of code transmission that opens the door to duplication, reverse engineering, illegal re-creation and other free uses. Within the peculiar physicality of the digital world, accessing is always already copying.

Thus, although MMOs could appear as corporate totalities equipped with the ultimate devices of commodity stabilization protecting them from piracy, snatching, and decommodified uses, many instances of commercial connection between the space of the game and the outside world belie the illusion of a self-contained world in which any overflowing of the commodity form has been disabled. Most economic practices within synthetic worlds exploit the dynamics of commodification rather than subvert them, whether we are talking of the selling of out-world goods within a given virtual world, or the out-world commercial exchange of in-world goods in an MMO. Yet, cases where successful commodification was genuinely challenged, such as with the Copybot affair in *Second Life* in the early 2000s or theft on contemporary MMOs, revealed that synthetic worlds can never get completely away with the physical inscription of virtual goods. In those configurations, the necessary physical mediation of commodity circulation combined with the zero-cost reproduction of virtual goods,

76. Kurt Hunt, "This Land Is Not Your Land: Second Life, CopyBot, and the Looming Question of Virtual Property Rights," *Texas Review of Entertainment & Sports Law* 9 (2007): 141.

allowed for the latter to exist, transfer and multiply in ways that escaped the restricted plan of capital valorization.

## VI. CONCLUSION: OBSOLESCE VICTORIES

In this article, we argued that the contemporary moment does not signal a virtualization of the commodity, nor an alleged derooting of the economy from its “hard” material substance. Capitalism did not become any less material with the emergence of more intangible content matter. The commodity is a social form distinct from the content it captures: nowhere is this more palpable than in situations in which fluid substances—digitized culture, virtual creation, or natural reproduction—face tangible attempts to limit their flow, such as DRM, GURTs, and their likely successors.

These purported moves toward more systematic content enclosure carry material and political implications. If critical theory should take into account developments that seem to overflow the commodity form and appear to indicate its “failure,” it should also focus on increasingly costly attempts to perpetuate it. When successful, the expansion of the commodity into the cognitive and creative sphere, combined with the unique development of its legal and technological containment apparatus, may seem to signal the ever-increasing power of capital to commodify, and thus point to the heyday of commodification. It is even possible to interpret the expanding institutional framework of intellectual property and the growing institutional apparatus to enforce its laws as its unambiguous strengthening, and as a sign of the increasing maturity of the media commodity. If one takes into account the rising costs of copyright protection against the just-so-slightly diminishing rates of piracy, however, one can also read this swelling as an indicator of just the opposite: the incompleteness of the juridical-institutional framework of commodification, its failing efficiency in stabilizing and containing digital contents. In the space of a single exploratory article we cannot provide a full account of this complicated story, but it is already clear that not all stakeholders accept the present legal protection against piracy. The institutional swelling of the IP juridical apparatus has elicited calls for its suppression, instantiated by struggles against the new enclosure,<sup>77</sup> the protests that met the

77. Dan Hunter, “Cyberspace as Place and the Tragedy of the Digital Anticommons,” *California Law Review* (2003): 439–519; James Boyle, “The Second Enclosure Movement and the Construction of the Public Domain,” *Law and Contemporary Problems* 66, no. 1/2 (2003): 33–74; M. Hardt and A. Negri, *Commonwealth* (Cambridge, MA: Harvard University Press, 2009).

most recent introduction of the Anti-Counterfeiting Trade Agreement (ACTA), or the emergence of Pirate political parties in Europe.

Thus, the commodity form can equally be described as obsolescent. Theorists of the obsolescence of the law of value,<sup>78</sup> but also critics of this thesis,<sup>79</sup> have tended to conflate the notion of obsolescence with that of decay and other organic metaphors of decline. By taking the related case of the commodity form—which, like the so-called law of value, is not a transcendent lawlike object but a resistible historical force by which human relations are constrained and contained—we have suggested that increasing obsolescence did not preclude successful perpetuation and even reinforcement. Rather, perpetuation itself can turn into a violent political process reminiscent of primitive accumulation, and as such reveal itself as anachronistic. “At a certain stage of their development,” Marx wrote famously, “the material productive forces of society come in conflict with the existing relations of production, or—what is but a legal expression for the same thing—with the property relations within which they have been at work hitherto. From forms of development of the productive forces these relations turn into their fetters.”<sup>80</sup> Today, the very swelling of juridical and technological measures developed to stabilize content and limit the satisfaction of needs, their rising economic cost and the surging amount of collective social energy they require to waste, may thus similarly speak for the impending obsolescence of the commodity form: not so much its actual social decline as the increasingly blatant historical inadequacy of its forcibly prolonged maintenance.

78. Antonio Negri, *Marx beyond Marx*, trans. Harry Cleaver, M. Ryan, and M. Viano (New York: Autonomedia, 1991).

79. M. Henninger, “Doing the Math: Reflections on the Alleged Obsolescence of the Law of Value under Post-Fordism,” *Ephemera: Theory & Politics in Organization* 7, no. 1 (2007): 158–77.

80. Karl Marx, “Preface to *A Contribution to the Critique of Political Economy*,” in *The Marx-Engels Reader*, 2nd ed., ed. Robert C. Tucker (New York: Norton, 1978), 3–6, quotation on 5–6.