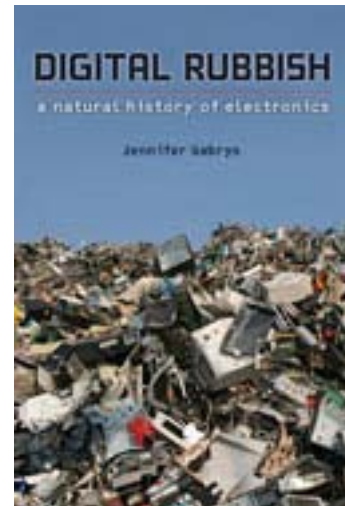


## Q&A with Jennifer Gabrys, author of *Digital Rubbish: A Natural History of Electronics*

*Digital Rubbish: A Natural History of Electronics* describes the materiality of electronics from a unique perspective, examining the multiple forms of waste that electronics create as evidence of the resources, labor, and imaginaries that are bundled into these machines. By drawing on the material analysis developed by Walter Benjamin, this natural history method allows for an inquiry into electronics that focuses neither on technological progression nor on great inventors but rather considers the ways in which electronic technologies fail and decay. Ranging across studies of media and technology, as well as environments, geography, and design, Jennifer Gabrys pulls together the far-reaching material and cultural processes that enable the making and breaking of these technologies.



Jennifer Gabrys is Senior Lecturer in Design and Convener of the Masters in Design and Environment in the Department of Design, Goldsmiths, University of London.

### The University of Michigan Press: What led you to write the book, *Digital Rubbish*?

**Jennifer Gabrys:** My initial interest in the topic of electronic waste sprung from a curiosity around how to materialize and locate the complex infrastructures of information. In this research, I was working both from an attention to the intersection of environments and communication technologies, at the time specifically through examining the development of new “information cities” in derelict industrial districts and the ways in which these informational industries required not just new resources, but also generated specific wastes; and also from a fascination with a growing body of literature around materiality and communication. In this latter area, I was drawn to the insights made by N. Katherine Hayles in her remarkable text, *How We Became Posthuman*, and the analysis she makes about the necessarily material qualities of information. While her material analysis of information often focuses on materialities of different texts, I hoped to take this discussion further by considering the material geographies, dead matter, technological fallout, and various forms of noise that were also characteristic of information. This is where I developed, drawing on Walter Benjamin, the material method of a natural history of electronics, where I emphasize the natural-cultural registers of residual electronics as fossils of technological development.

Once I began locating and materializing information and its devices—specifically through waste—I found there were many ways in which electronics materialize as *waste*. The manufacturing stage of electronics requires resources that are vastly disproportionate to the size of the actual devices developed. The volume of electronics consumed continues to grow apace, so that electronic waste is often designated as one of the fastest growing waste streams. But electronics materialize as waste at more than just the manufacturing or waste phases of their operation. The book then took shape by working through the ways in which

electronics are not just inert stuff, but constitute *processes* of materialization. What are the material processes that are critical to electronics? This question led me to include perhaps less obvious sites such as Nasdaq and the computer archive as sites of materiality and waste-making. These are infrastructures that can be studied as distinct sites where electronic materialities unfold.

**UMP: What is your own scholarly background and teaching in this subject area?**

**JG:** *Digital Rubbish* perhaps reflects my interdisciplinary background, which spans from communication studies to spatial practice. Much of my research in the area of communication studies has focused on critical media theory that engages with the materiality of communication—and that qualifies the notion that “information wants to be free” by returning to the multiple ways in which information is materially embedded, bound into economic exchanges, and politically charged.

Materialities are now a growing area of interest across many academic fields, and from “vibrant matter” to “political matter” and “new materialisms” there are now texts from political philosophy, geography and social theory that take up the ways in which materiality has renewed relevance for understanding our social, environmental, economic and political lives.

While I am drawn to these exciting developments within material theory, my interest in the intersection of environments and communication technologies is also informed by my experience with spatial practice. My experience in working on projects concerned with urban waste sites, specifically the Fresh Kills Landfill competition, no doubt sparked my interest in thinking through electronic materiality from the perspective of waste. The bin-ends of cultural activity, especially as they congeal into unexpected new forms such as sprawling landfills, provide an unwitting tale of material politics. Don DeLillo’s *Underworld* sketches just such a scene of recognition when the waste manager who is the antihero of the novel stands at Fresh Kills landfill and considers the relationship between the hubris of a major city such as New York, and the remains it generates. These remains can then be provocative sites from which to consider how our material lives are located and resourced, and the new natures that emerge through these processes.

The topics of materiality and waste regularly surface in my current teaching on the MA Design and Environment, a program which I convene at Goldsmiths, University of London. The issues of consumption, recycling and salvaging practices are topics that design students are interested to address both from practical and theoretical investigations. By working across theory and practice we are able to consider what other arrangements of technology, materiality, everyday life and economies of exchange might generate alternative possibilities for electronics. We of course also draw on the rich network of people working at the intersection of these issues, and have had guest speakers including Benjamin Gaulon and Brian Solon in residence,<sup>1</sup> who have led an e-waste workshop where disused appliances were repurposed (or hacked) through the use of physical computing (Arduino). These practices are interesting both because devices are reused in unusual ways, but also because the “black box” of electronics can be opened up so that these devices are a lot less opaque—both materially and politically.

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<sup>1</sup> <http://www.recyclism.com/ewaste.php>

**UMP: How does the book address or fit into the current situation with the build-up and export of electronic waste?**

**JG:** Although *Digital Rubbish* is not primarily a book about environmental policy, and instead addresses the materialities of electronics, it does engage with current attempts by both governments and non-governmental organizations to document and remedy the build-up and export of electronic waste. Working from a material and historical perspective, I attempt to understand the rise of electronics within a burgeoning consumer economy, and to situate questions about alternative approaches to electronics within these material and political ecologies and economies. A critical part of what I addressed in this approach is the need to understand our technological relationships and narratives, not from idealized notions of progress or liberated users, but rather from the remainders of technological aspirations.

**UMP: The EU recently instituted new electronic waste guidelines. Do you anticipate a similar set of rules in the US, and if not, why not?**

**JG:** The EU has implemented (and modified, updated and amended) electronic waste guidelines that date to 2002, including the Waste electrical and electronic equipment (WEEE) and Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) directives.<sup>2</sup> These guidelines promote the collection and recycling of electronics, while also restricting the use of certain hazardous substances. Despite the implementation of these directives, however, electronic waste still continued to flow toward landfills and developing countries, and so the EU has recently updated the legislation to require mandatory recycling and recover targets (based on rates of consumption in individual countries).<sup>3</sup>

Within the US, the EPA recently identified electronic waste as one of the six major global environmental issues of international priority, together with combating climate change and improving air and water quality.<sup>4</sup> The EPA takes as its area of concern the “design, production, handling, reuse, recycling, exporting and disposal of electronics.” It may be that electronic waste guidelines will emerge on the one hand through these international collaborations where (universal) product standards are set, and on the other hand through more local, typically state-based forms of legislation and waste management.<sup>5</sup> While not impossible, it will require a considerable effort for the US to adopt formalized, federal-level legislation on par with the EU standards in the near future, since economic issues are frequently seen to be at odds with environmental directives in the US context.

However, ongoing attempts are being made to curtail some of the more harmful aspects of electronic waste, including an attempt to introduce federal legislation for the “Responsible

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<sup>2</sup> <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2003:037:0024:0038:EN:PDF>;  
<http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=CELEX:32002L0095:EN:NOT>

<sup>3</sup> [http://ec.europa.eu/environment/waste/weee/index\\_en.htm](http://ec.europa.eu/environment/waste/weee/index_en.htm)

<sup>4</sup> <http://www.epa.gov/international/topsix.html>

<sup>5</sup> <http://www.ecycleclearinghouse.org/content.aspx?pageid=10>

Electronics Recycling Act of 2010” that would prohibit the export of electronic waste to developing countries.<sup>6</sup>

As the EU guidelines have demonstrated, however, legislation is rarely sufficient in addressing environmental issues, since a number of other issues emerge that must also be tackled. On a practical level, questions emerge as to what infrastructures are in place or planned for electronic waste-handling. Questions also emerge as to what enforcement strategies and incentives are in place, whether for manufacturers to be more responsible in electronics manufacture, or for recyclers not to export electronics to developing countries.

On a more wide-ranging level, additional questions emerge as to what other material economies (and ecologies) might be possible beyond consumer-based economies of increasing consumption and obsolescence. And on a creative and local level, while salvaging, reuse and recycling of electronics are popular topics within design and computing, questions emerge as to how computers might feasibly be “up-cycled” to anything remotely durable or lasting, especially given the volumes of (hazardous) waste to be handled, and the complex networks that electronics often need to connect into to be useable.

**UMP: Do you think the flow of waste from innovation and replacement cycles in electronics will increase, decrease, or remain the same, and why?**

**JG:** Electronic waste flows are currently set to increase rather dramatically, not just due to the declining costs of electronics and increasing consumer sales in burgeoning economies like China and India,<sup>7</sup> but also because more and more stuff continues to be made electronic or electronics are re-fashioned as must-have items, from e-readers, Kindles, i-phones and i-pads. The Web 2.0 social media “revolution” is clearly giving rise to a whole range of mobile Internet devices and applications.

These increases in electronics now include not just consumer devices, but also the expansion of computing to environments, where pervasive computing, smart grids, smart infrastructure, and sensor-monitored environments are increasingly common. The city is now seen to be a platform for smart computing, where urban infrastructures may be merged with digital functionalities to acquire new efficiencies (this is something I recently spoke about at the “Platform Politics” symposium in Cambridge).<sup>8</sup>

In my next book project currently underway, I am examining citizen sensing projects and the diverse ways in which electronic sensors and social media are increasingly used to study, monitor and report on environmental issues. On the one hand, I am fascinated by the connections articulated between information and environmental political action, and the ways in which new environmental subjects emerge through ongoing monitoring of environments with smart phones, for instance. On the other hand, I will inevitably consider the extent to which these pervasive modes of computing generate new environmental

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<sup>6</sup> <http://www.electronicstakeback.com/promote-good-laws/federal-legislation/>  
<http://www.opencongress.org/bill/111-h6252/show>

<sup>7</sup><http://www.unep.org/Documents.Multilingual/Default.asp?DocumentID=612&ArticleID=6471&l=en&t=long>

<sup>8</sup> <http://www.networkpolitics.org/content/platform-politics>

Digital Rubbish: A Natural History of Electronics  
Jennifer Gabrys  
<http://www.press.umich.edu/titleDetailDesc.do?id=973473>  
The University of Michigan Press, 2011

issues of their own—through more devices, infrastructures and information that all together contribute to the use and disposal of ever more electronics.

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To read more about *Digital Rubbish: A Natural History of Electronics* by Jennifer Gabrys, visit The University of Michigan Press at <http://www.press.umich.edu/titleDetailDesc.do?id=973473>.

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