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Sabine LeBel

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An Exploration of the Trashcan Icon

Sabine LeBel

Abstract: Drawing from software and waste studies, this paper is a preliminary exploration into the historical, material, and virtual contexts of the trashcan icon, as metaphor, virtual object, and now quotidian tool in mobile interfaces. It examines how the failures of the trashcan metaphor, especially in early Apple computers, enabled designers and users to make connections to physical trash and landfill. The paper locates the use of metaphor in the larger context of human-computer interaction to consider how the trashcan icon might connect the material and virtual realms of mobile trash.

Waste is a mobile concept. Specifically, what constitutes garbage changes with time and place (Winiwarter 2002, 38). Mobilities scholars might note that waste itself is highly mobile, as evidenced by the lucrative waste and recycling trade that crisscrosses the globe and includes tons of e-waste.[1] Not usually counted amongst e-waste or mobile

[1] For a detailed discussion see *Economies of Recycling: The Global Transformation of Materials, Values, and Social Relations*, edited by Catherine Alexander and Joshua Reno; "From Beginnings and Endings to Boundaries and Edges: Rethinking Circulation and Exchange through Electronic Waste" by Joshua Lepawsky and Charles Mather; and "Mapping International Flows of Electronic Waste" by Joshua Lepawsky and Chris McNabb.

trash, the lowly trashcan icon, now a ubiquitous feature in the screens and apps of most mobile technologies from smart phones to laptops, is a curious object for waste studies scholars as it can be seen as both a ghosting presence (or memory) in the trashed screens or hard drives of the global e-waste recycling trade and also as a virtual object with its own cultural history and symbolic values.[2]

Waste is inextricably tied to material and cultural social practices (Winiwarter 2002, 38; Gille 2007, 23-4; Hawkins 2001, 8). Digging into the development of the trashcan icon as part of the desktop metaphor that revolutionized personal computers in the early 1980s reveals the logic of immateriality and virtuality at work in software (and hardware) development. The debates around the use of metaphor in early desktops points to the instability – or mobility – of meaning, especially in the case of the trashcan in early Apple computers. Apple's desktop trashcan icon is one of the most discussed examples of attribute mismatch in human computer interaction (HCI) because of its dual purpose as a method of deleting files and also of ejecting devices. The trashcan metaphor failed, especially in the early years, because of its confounding nature making users nervous about accidentally deleting data. The trashcan icon has become as unremarkable, invisible, and embedded in daily life as have the metal trashcans of curbside garbage pick up that inspired it. The aim of this paper is to offer a preliminary exploration into the trashcan metaphor and its historical, material, and virtual contexts. The trashcan icon, as metaphor, virtual object, and now banal and quotidian tool in

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[2] See http://dumpsterdrive.com/ for a fascinating project in which users can file-share deleted files.

mobile interfaces, can suggest ways to make connections between the material and immaterial, physical and virtual flows of mobile trash.

My method for this paper is analogous to Susan Strasser's (1999) in *Waste and Want: A Social History of Trash*. She describes her methodology as*:* "that of a ragpicker: I grazed for evidence in computer catalogs and periodical indexes, spearing bibliographic entries to put into my pack… Like the ragpicker, I often found nothing more than scraps, even in the most promising sources" (18). The trashcan icon provoked passionate response from those working in HCI, and equally passionate, if fleeting responses, from a range of other thinkers and computer users working in the sometimes more liminal spaces of multimedia art, design, and visual effects. These responses are critical sources for this paper as they unearth part of the cultural history of the trashcan icon, a more recent artifact in the social history of trash.

The trashcan icon is reminiscent of the galvanized metal trashcans, and later plastic copycats, used for municipal curbside garbage pick up, which suggest landfill, incineration, or other waste management strategies introduced in the twentieth century (Strasser 1999, 271-2). It might also remind some of other iterations of the trashcan in popular culture from *Sesame Street*'s Oscar the Grouch's home, *Garbage Pail Kids*, or the myriad of small, plastic garbage pails often found on actual desktops to store things like paperclips or gum. Waste scholar, Zsuzsa Gille (2007) reminds us of the transitional nature of waste:

> the trash can, or recycling bin, is the most common destination for wastes, but of course it is only an intermediary one on route to the 'final' location of disposal: the municipal dump, the recycling center, or the incinerator. A

> more final (though, from a longue-durée perspective, only transitional) destination is of course our air, soil, and water. (21-22)

The trashcan has, since the 1970s, taken on ecological and moral dimensions as the landfill crisis (in Canada, the US, and other nations with booming consumer cultures) has prompted the opening of community-run recycling centres in many places, and the growth of recycling as a cultural and moral practice (Strasser 1999, 283). For Gay Hawkins (2001), the advent of municipal waste programs that require households (again, typically in wealthier communities and nations) to sort their recycling, trash, and organics has meant that taking out the trash has new dimensions: "We participate because we believe in some abstracted sense of social and environmental good" (12). The desktop trashcan icon, then, is worth unpacking for the clear ecological and moral connotations, which the metaphor presents.

Metaphor is central to both HCI and media ecology. Metaphors connect thought to action and, in the case of the desktop metaphor, the virtual to the material (Lakoff and Johnson 2003, 3). Symbols are part of the graphical software control central to the human computer interface that allow users to communicate to the machine what function they wish to perform (Cramer 2006, 169). As part of the software in early desktop computers and later mobile devices, the trashcan icon allows users to delete unwanted files or virtual objects. Matthew Fuller (2008) cautions against an instrumentalist approach to software, in which it is understood as a "neutral tool," because this can hide permutations in the histories and practices of software development (3). In "Unnatural Ecologies: The Metaphor of the Environment in Media Theory," Ursula Heise (2002) suggests that

> the rifts in the interpretation of media ecology allow one to bend the metaphor back to its literal context, and to investigate the interplay of technology and nature in a more broadly understood spatial ecology that encompasses both material and virtual habitats. (152)

Bringing the trashcan metaphor back to its literal context unites it with contemporary waste management practices and problems, from overfull landfill sites, the growing amount of e-waste, and to the curious problem of what exactly constitutes digital trash.[3] In this schema, the trashcan icon is a virtual gesture towards the physical world of trash, with its attendant fraught practices of waste management and anxieties of "environmentally concerned subjectivity" (Hawkins 2001, 12).

The use of metaphors in human-computer interface (HCI) is an established if somewhat disputed practice and is intended to allow novice users to draw on their existing knowledge in the use of the machine. It is standard instruction in HCI textbooks to advise designers to exploit metaphors. Says one: "Metaphors are the tools we use to link highly technical, complex software with the user's everyday world" (Weinschenk et. al, quoted in Blackwell 2006, 492). When the metaphor succeeds, the user is able to work the device, and the metaphor *as metaphor* fades into the background with practiced use.

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[3] For a more detailed discussion, see *Digital Rubbish* by Jennifer Gabrys, "Digitritus: Virtual Species or Digital Waste, Ownership in the Information Age" by Donna Tracy, and "Digital Myths and Delusions: An Approach to Investigate Interaction Aesthetics" by Hanna Landin.

The 1981 Xerox Star, a descendent of the Xerox Alto that was only ever released as a research computer, was the first commercial computer to use the trashcan icon. It was part of the desktop metaphor developed at the Xerox Palo Alto Research Centre (PARC) as part of the graphical user interface (GUI) (Levy 1994, 67 and 71). When the Apple team working on the Lisa computer visited PARC in 1979, they were given an impromptu demonstration of Smalltalk, a computer environment that was the precursor to the ones used on the Alto and Star computers (Perkins, Keller, and Ludolph 1997, 41). This visit inspired the team to adopt a completely different user interface that included the desktop metaphor, and trashcan icon, in the 1983 Lisa and subsequent machines (Perkins, Keller, and Ludolph 1997, 42).

The trashcan metaphor used by Apple is perhaps the best-known example of attribute-mismatch in HCI (Hamilton 2000, 119). As a method of deleting files, the trashcan metaphor succeeds; as a method of ejecting disks or devices, it fails. In 2000, a study of Mac users suggested that, although they get used to it with practice, it made even experienced users uncomfortable because they worried about accidentally deleting data (Hamilton 2000, 117-9). Looking at these histories, the trashcan metaphor failures are perhaps instructive from a waste studies perspective because they cause users to pause and make momentary connections between the actual and physical world of trash.

Certainly those working on software and design made those connections. In *A Guide to Usability*, an introduction to HCI for designers, programmers and others, the authors say:

> As part of the desktop metaphor it is common practice to include an icon of a wastebasket on the 'desk.' Not only does this contravene our expectations as to where to find dustbins (on the floor), but also the

> interface dustbin has other functions apart from its conventional use as a container for discarded objects. For instance, the wastebasket is often the place where disk icons are put in order to eject the corresponding disk from the disk drive. This implies that one has to 'throw away' a disk in order to retrieve it! Such an apparent contradiction can cause conceptual problems to first-time users since it is easy to think that the content of the disk will be discarded when the disk is place in the wastebasket. (Benyon, Davies, Keller, Preece, and Rogers 1993, 31)

In an attempt to think through the mechanisms of the metaphor, Tim Rohrer says:

> The magic of the trashcan has to do with its being a portal to the beyond in the PHYSICAL WORLD metaphor – the beyond of the landfill, the beyond of the electronic bit bucket, and the beyond of the world outside the computer. (Rohrer, quoted in Treglown 1999, 177)

For these authors, part of why the metaphor fails is precisely because the trashcan is on the desk, or is, to paraphrase Mary Douglas, matter out of place.

Writing from an entirely different perspective in 1999, Joe Milutis examines the CDROMs of Art Jones and Reginald Woolery. The article investigates the use of interface in experimental multimedia art, with an emphasis on how it explores the relationship between medium, communication, and interface. He suggests that these projects, with their mix of pop culture, hip hop, and Afrofuturism, offer a critique of the digital mainstream, including the discourse of user-friendliness (100). Milutis locates experimental CDROMs as a critical edge against the corporate dominance of the technology and suggests that hidden meanings lurk in the design of "more palatable"

mainstream computer icons, which are “seemingly devoid of ideology” (100). He offers the following commentary on the Mac trashcan:

> Think, if you will, of the hieroglyphic trashcan of the Macintosh interface. How is it that we identify with this trashcan, when our experience of the "trashcan" can range from the wheeled-Tupperware that serve as receptacles for the minor-excreta of catalog culture to hermetically-sealed drums suitable for nuclear waste, biohazard material, or dead bodies? To extend Jones's "Street" imagery, Oscar the Grouch is so charmingly bitter because his galvanized and fluted can is a veritable Victorian mansion in comparison to the inner-city dumpster. From dustbin to dumpster there is a range of forms that the "trash" icon can take, as there are also a variety of histories that can be salvaged from the detritus of "the storm we call progress.” (Milutis 1999, 102)

The Mac icon offers a sanitized and cute version of the trashcan.

The Lisa team at Apple originally designed the trashcan to have a fly flying around it but they decided that it was “too groddy,” especially for their corporate clients (Levy 1994, 150). The flies belie the humour and playfulness that Mac’s design teams are known for, but they also bring the suggestion of organic decay.[4] The groddy virtual fly might have brought with it unpalatable associations with the stench of garbage and

[4] Referred to by reporter Ron Wolf in the San Jose Mercury news as “the mother of the Mac trashcan,” Susan Kare is the designer responsible for the simple and whimsical style of the early and groundbreaking Mac desktop icons. She redesigned the existing trashcan icon in the first Macintosh computer interface. See Kare’s website: http://www.kare.com/articles/

landfill, at odds with the aspirations for clean and orderly white collar corporate work spaces. In the context of the aesthetics of interface design, Hanna Landin (2008) discusses the practice of deleting digital trash using the trashcan icon. She connects it to the myth that a "tidy and clean desktop means that we are disciplined, efficient and therefore also good workers" (221). In his study of knowledge work, Alan Liu traces the evolution of the term "user friendly," a concept central to HCI, ergonomics, and software at large. Although HCI is ostensibly about creating "user-friendly" machines and interfaces, as Fuller and Liu have noted, HCI also invariably trains the user to behave in particular ways (Fuller 2003, 13-4; Liu 2004, 169). In the case of the trashcan icon, this training fits the ideals of cleanliness and orderliness in corporate office spaces, but also maintains, and even contains, our ideas about trash. Waste is not just a mobile concept, but is also a contested one.

In 1968 IBM split software from the hardware section in response to an antitrust investigation launched by the US Department of Justice (Fuller 2008, 2; Campbell-Kelly 2003, 109-10). At this moment, Fuller (2008) argues, software became a commodity instead of a bundled service or gratuity (3). The commodification of software opened the door to the version economy, in which software must be continually upgraded (Fuller 2003, 101). The version economy of software is directly tied to the practice of planned obsolescence, which is arguably the driver of the current e-waste crisis.[5] In addition, this critical moment furthered misunderstandings that software, as an information pattern, is immaterial when the materiality of software is arguably "the architecture of the computer" (Fuller 2003, 100; Hayles 1999, 12-4). The metaphor is central to the version

[5] See Giles Slade's (2006) *Made to Break*.

economy because it maintains continuity between versions or, by its absence, retrains the user to use software upgrades. Metaphors can limit our understandings of the software and hardware because of the ways they restrict and guide our thinking (Gentner and Nielson 1996, 70). In the case of the trashcan, the metaphor as metaphor, and therefore, trashcan as trashcan, have undoubtedly faded from most users' awareness. For Alan Liu (2004), user-friendly protocols, such as those that drive the use of metaphors in HCI, are ultimately connected to information work and the corporatization of culture (172).

These disparate thinkers associate the physical with the digital, the material to the virtual, and software to landfill. Materiality is conjured from the failures of the trashcan metaphor. Users make connections between their computer and garbage, although not necessarily to e-waste. They consider the physical state of garbage and what gets thrown in the trash.

Skipping ahead to future iterations of the trashcan icons and their equivalents, it is worth noting that IBM has favoured the recycling bin icon, surely a nod to environmental friendliness, while Apple has switched from a trashcan to waste basket icon. The waste basket icon fills with clean, white, crumpled paper when full: a trash metaphor that is a cleaner and more white-collar representation of trash than the older trashcan icon – and a far cry from the range of trash and receptacles enumerated by Milutis that might include anything from decaying organic matter to toxic waste. This is not to suggest an insidious intent on the part of software and icon designers, rather to observe how the creep of corporate culture affects the metaphors through which our

technologies are mediated. Metaphors are the underpinning through which we understand our daily lives and use our technological systems. While waste might be conceptually mobile, the metaphors we draw from it restrict how we think about it.

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Bio: Sabine LeBel teaches in the Media Studies Department and the University College Writing Centre at the University of Toronto. Email: sabinelebel@gmail.com

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