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Mirror
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The mirror is one of the most trafficked metaphors in Western thought. In ancient Greek mythology, Narcissus dies transfixed on his reflection in a spring. According to early sociology, we are a "looking-glass{{OK to hyphenate?}} self." Our identities are formed when we mirror how we think others see us (Cooley 1902). In *Philosophy and the Mirror of Nature*, Richard Rorty (1979) shatters the Enlightenment goal{{Maybe "ideal"?}} that through scientific inquiry the mind could mirror nature, harboring replicas in mental formulas.{{OK?}} Thus, from antiquity onward, the mirror metaphor has been used to describe everything from vanity, to subject formation, to consensual reality. Today, information companies and information activists alike call data duplication *mirroring* but often fail to acknowledge how the symbolism of this term may impact its use. Mirrors are more complex and faulty entities than simple facsimiles. With duplications come decreasing fidelity and increasing glitch. As social processes, *mirrors* echo the intricacies and limitations of data practice. I endeavor to explain how for information activists and information firms, mirroring is an exploit of networks and computers to remain visible through replication.

Mirrors—derived from the Latin *mirare* for "to look at"—are metaphors for what they reflect. In *Through the Looking-Glass*, Lewis Carroll (1871) has Alice journey through a mirror and into a parallel and parable-rich universe of reversals. In Oscar Wilde's *The Picture of Dorian Gray* (1891), the mirroring portrait ages but the protagonist does not. Hillel Schwartz (1998){{The reference list has 1996—please reconcile.}} traces this history and our obsession

with twins, replicas, duplicates, decoys, counterfeits, portraits, mannequins, clones, replays, photocopies, and forgeries. The mirror metaphor continues into the digital age. The United Kingdom's Channel Four television series ~~the~~ *Black Mirror* is a drama that comments on a dystopic future of increasing connectivity. Charlie Booker's ~~programme~~program sees our mobile and laptop screens as black mirrors into which we stare ~~as if~~ Narcissus-like{{Does this work?}} and which reflect back our self-destructive ways. ~~Co~~ Cofounder of file-sharing company The Pirate Bay~~,~~ Peter Sunde~~,~~ is presently in prison for his copying acts and believes that copying is genetically coded, saying: "People learn by copying others. All the knowledge we have today, and all success is based on this simple fact—we are copies."{{Might you want to source this quotation?}} As a locus for the confluence of metaphysics and materiality, mirrors are a way to see how the practical and metaphoric are ~~co~~ coconstituted in database worlds.

Any discussion of mirrors must include mention of Jacques Lacan. For ~~early~~ early Lacan the mirror stage is the moment between six and ~~18~~eighteen months when a child apperceives or objectifies ~~their~~her subjectivity. This turning ~~inside~~ inside out is an externalization of interiority, or the freezing of the modern subject. Referencing the technology of his time, Lacan ~~refers to~~invokes{{To avoid echo ("Referencing … refer")—OK?}} a jammed cinema projector that is suspended on a single frame that then becomes the ego (~~Zizek~~Žižek 1997). Identification begins and, for Lacan, alienation and narcissism soon follow: the mirror is no longer a stage but an imaginary and fraudulent state that permanently masks the absence of the symbolic and the unattainability of the real. Scholars following late Lacan, by contrast, extend the metaphor to describe the mirror as the site of the formation of the subject, where the virtual is an ideal made real that emerges from "games of mirroring" (Deleuze 1972~~,~~: 172). Database mirrors too are virtual ideals of perfect duplication made imperfectly real. They are frozen information

externalizations~~,~~~~;~~ duplications that strive for unattainable states of exacting verisimilitude. Referencing the technology of our time, we can think of a database mirror as a replication of a frozen operating system—the Apple "spinning pinwheel" or, less formally, "spinning beach ball of death"—that locks a user's screen into an ideal and imperfect frieze.

This essay seeks both to discuss mirrors as a metaphor as well as to show how mirroring serves as a practice of data activism and cloud computing. Below I describe how computing mirroring keeps a copy of some or all of a particular content at another remote site, typically in order to protect and improve its accessibility. Mirroring multiplies data sources. For activists, mirroring is a method to preserve and protect visibility through duplicating and distributing their resources across communication networks. Mirror multiplicities also allow cloud companies to capture and sell personal information. Geographically dispersed and intensely complex, mirrors are no simple replication of origins: rather they are a form of praxis or a way of being and becoming in the networked world. Data mirroring reveals in our digital reflections a hall of mirrors between the practical and the metaphoric, the actual and the virtual, the hyperreal and the ideal.

Both the replication and visibility elements of mirroring are political. Reflecting, repeating, amplifying, translating, replicating, and copying are core modes for understanding the control of modern information. These practices are often but not necessarily visual. In computational culture, the seen and the unseen are interlinked in ways not easily perceived. Mirrored databases, XML spreadsheets, copied JPEGs, and torrented videos each have visual components allowing front-end users to graphically interface with back-end code. In this way, screened, front-end interfaces translate computer applications for human readability. The front end ~~end~~{{I observe the convention whereby "front-end" (adjective) is hyphenated, but "front

end" (noun) is not.}} is what is visible, seen, public, and, as a semantic object, most easily subjected to political deliberation and economic capture. The back end end, where a hidden battle for control and capture of information is waged, is invisible to all except expert engineers and hackers (see Hhacker).

Mirroring data sets from private and invisible sites to public and visible ones often renders such battles visible. Mirroring often punctures with data leaks the veil hiding the back back end, so that the links between the visible front front end and invisible back back end too are made visible. The machinery is exposed and the black box of hardware opened. In this way, replication of remote data sets becomes a question of visibility. One struggle is about control over the back back end and privacy; another is focused on who has the capacity to make the invisible visible in public. While I emphasize the visual front front end of mirrored data sets, it is the mirroring or duplication of the back-end data and metadata that drives understanding of what is possible with the digital. Mirroring is a unique and contemporary digital manifestation of that always politicized act of information replication.

Mirrors as Multiples

Mirrors are multiples. Mirroring serves several purposes. Cloud computing relies ofon mirroring or replication of databases for global access and security. Microsoft, which provides a number of cloud computing services, defines "database mirroring" as the maintenance of "two copies of a single database that must reside on different server instances." The basic copy-and-paste function of networked digital computing makes possible, according to these same computing companies, the non nonrivalrous multiplication of data. Of course not only Fortune 500 information companies marshal mirroring techniques to preserve and protect their data integrity. Data and transparency activists with WikileaksWikiLeaks also actively "mirror" its content. They and

their supporters mirror content in jurisdictions outside of America in the face of the legal shutdown of private servers housing their incendiary cables. Today, servers in at least eleven European nations offer the WikileaksWikiLeaks mirror (http://wikileaks.info/). The largest peer-to-peer file-sharing service in the world, tThe Pirate Bay, mirrors its links on servers in national jurisdictions where its practices have yet to be deemed illegal (18eighteen countries presently block root access to tThe Pirate Bay). Mirroring, thus, is a replication practice for both hegemonic and counterhegemonic actors. Despite this political symmetry, it would be misleading to claim that mirroring produces exact replicas.

To offer robust, secure, and non nondelayed access to content, it is necessary to store multiples. Yet Microsoft offers a naïvenaive realist notion that mirrors are precise copies, merely displaced within or across databases. A slightly more complex social constructivist perspective sees mirrors as symbolic representations. In constructivism, mirrors would not be conceived not as duplicates but rather as iconic yet accurate depictions. Physicist KaranKaren Barad (2003) challenges both "naïvenaive realist" as well as constructivist interpretations of mirrors, offering a third construal. Echoing Rorty, she says, ". . . tThe{{Following *Chicago* convention.}} representationalist belief in the power of words to mirror preexisting phenomena is the metaphysical substrate that supports social constructivist, as well as traditional realist, beliefs" (Barad 2003,: 802). Mirrors produce neither realist copies nor constructed depictions. Rather mirrors are data multiplications that make political contests visible.

In other words, data mirroring does not represent so much as it reveals the complexities of those who mirror their content. For example, in cloud computing, content is retrieved and recomposed from geographically remote databases connected by complex networks. Instead of representing these networks as single entities, they should be visualizedwe should visualize them

as similar to other complex networks, such as disease, criminal, and biological processes in nature. Each multiple, whether a mirrored file or a wild virus, exists in its numerous coded transections (Mol 2003;{{I don't find this in the reference list—please add it.}} Ruppert 2013; MacKenzie and McNally 2013). In each case, the multiple is no fragmented or contradictory singularity. It is a fluid "field of multiple conjoined actions that cumulatively enact new entities" (Ruppert 2013). The "performative excesses" of multiples "undo or unmake identities as much as they make them" (Mackenzie and McNally 2013). Structured by diverse databases and unmoored from single origins, mirrors are multiples that serve hegemonic and counterhegemonic actors alike.

Mirroring as Activist Visibility

Mirrors transform seeing and what is seen. The legitimacy of WikileaksWikiLeaks, The Pirate Bay, and Anonymous, among other counterhegemonic forces, rests on their ability to remain seen through replication. This is of course nothing new. Through physical vanity mirrors, European Mmedieval people "came to reflect on, know and judge themselves and others through becoming aware of how they appeared" (Coleman 2013: 5; Melchior-Bonnet 2001).{{I don't find either of these in the reference list—please add them.}} Using lenses and mirrors to transform his studio into a camera obscura, 17ᵗʰ seventeenth-century Dutch painter Johannes Vermeer painted not the depth of field and the textures seen by the unmediated human eye but the world as framed by a camera (Steadman 2002).{{I don't find this in the reference list—please add it.}} Herein lies another regime of technological-assisted seeing and copying. Historically, writing and printing systems prioritized and privileged the ocular (or what the eye could see), mandating{{Maybe "allocating"?}} power to those who could read, write, print, and evaluate based on text (Ong 1977; McLuhan 1964). "Scopic regimes," such as Western science

and law, control the power by making certain things visible and legible, and others not (Jay 1992).{{I don't find this in the reference list—please add it.}} Likewise, visual technologies organize and assemble the real, the natural, and the moral for Western technoscientific systems (Haraway 1997). By "seeing like a state," nations objectify and thereby control colonial bodies (Scott 1999).{{I don't find this in the reference list—please add it.}} This will to visibility is also profoundly gendered in cinema that has historically served the male gaze (Mulvey 1975). Visibility "lies at the intersection of the two domains of aesthetics (relations of *perception*) and politics (relations of *power*)" (Brighenti 2007,: 324). So too does digital mirroring replicate files in order to manipulate both their legibility and their legitimacy. Even the term "*replicate*" means etymologically "to fold back": and to fold back, or to ply (re-pli-cate) something, suggests such literal manipulation (see Ddigital).

Leaking classified information is obviously a political and, in some countries, treasonous act. That copying could be as inherently political is less obvious. however. Lisa Gitelman, for example, emphasizes not the leaking but the photocopying of the Pentagon Papers by whistle-blower Daniel Ellsberg as the duplication strategy to make visible the invisible. Contrasting the slow analog act of duplicating thousands of sheets of paper to the instantaneous work of WikileaksWikiLeaks in which the "entire site was also 'mirrored' in several places around the world," (2011, 122),{{OK?}} she sees a return to an older activism of making visible through duplication—a *glasnost redux*.

Or consider how Anonymous—made famous by hacks, leaks, and performative politics—secures visibility and subtle marketing for their political videos by mirroring them across YouTube. Gaines (1994) calls this process of political videos hailing viewers to copy revolutionary subjects "political mimesis." Again, following Barad, while mirrors represent

politicized bodies, they are more than mere representations. Here, mirrors do not reveal sources but rather reveal conflict and contestation. For example, in response to the Church of Scientology's attempt to force YouTube to take down earlier Anonymous videos critical of Scientology, Anonymous decided to mirror its videos on YouTube. Instead of representing or responding to those ~~that~~who resist their criticism, Anonymous appeals to video mirroring as a way to make visible the conflict itself. In this case, the mirrored videos do not mark just the videos. Each activist video mirror reveals a once-hidden conflict by simulating the conflict it cites. Hacks, leaks, and video mirrors are forms of visual ~~counter~~counterpower. The power to see and not be seen—from the eye training of literacy, to the male gaze in cinema, to cultures of self-presentation and reality television, to visibility-optimization industries of fashion and advertising, to video mirroring—constitutes regimes of power and ~~counter~~counterpower in networked society.

When activist groups such as WikiLeaks~~leaks~~, Anonymous, and The Pirate Bay mirror, their radical politics cannot help but "misuse" capitalist information infrastructure (Soderberg 2010). Despite their reliance on for-profit social media platforms (Dean 2010), grassroots mirroring still raises voices that resist censure in the circuits of ~~techno~~technocapitalism (Couldry 2010). Mirroring is one among many promising but nonetheless uneven forms of technological resistance available to support and resist for-profit capture of information.

Capturing the Mirror

The short story of human history may be told as one of the incremental accumulation of information creation and control (~~Gleik~~Gleick 2011). Human evolution—and before{{Does this mean "like that of humans' predecessors"? Might this phrase work?}}—witnesses a slow collective increase in the size and complexity of the neocortex, language, group dynamics, and

many other information resources (Dunbar 1993). The data-carrying capacity of our media—rock, wood, fiber, and now digital circuits—to store, transmit, and process symbolic systems has dovetailed with the increasing complexity of the brain, language, and society (Ong 1977;, McLuhan 1964). Mirroring is just one among many manifestations of the prehistoric practice of data communication, control, manipulation, and copying—and, as ever before, current institutional risks and the{{OK to add?}} political economy of corporately owned owned databases shapesshape and structuresstructure the current state of virtual data. Mirroring of data in a political economy of data corporations ensures, with Deleuze, the "double-movement of liberation and capture" (1972):{{Might you want to add a page number for the quote?}} mirrors let activists appear visible in public at the same time they let data corporations capture social capital. Simultaneously, distributed mirroring also allows activist data to escape capture on sites corporations do not own.

The business proposition of cloud companies is that mirroring is an affordable and socially responsible way of securing retrievable data. We pat ourselves on our backs when we back our data up, post autobiographical and personal artifacts, and work on the move by placing our documents in the cloud. The same proposition is compromised, however, by the fact that all this plays into surveillance with unseen consequences and costs for our body politic. Bound up in the back-and-forth of hegemonic and counterhegemonic power struggles, mirroring is no innocent activity: it captures for some and liberates for others the very data it displaces, diffracts, and makes autonomous. It serves activist visibility as well as the trap of the same.

Conclusion

Mirrors make and save copies in different places. But, as we all know, mirrors make no exact copies and identifiesidentify not with itstheir reflections.{{OK? Or something else amiss?}}

Mirrors are no{{OK as is, not "not"?}} products but rather idiosyncratic processes for creating complex multiples autonomous from their origins. Mirroring, or the practice of using mirrors, does not promise realistic representations. Rather it offers a way of being, acting, and moving in the world. Mirrors map and reveal both activist and corporate forms of conflict and contestation: for activists, mirroring reveals a will to remain visible in a world of censorship, surveillance, and information infrastructural control; for cloud companies, mirroring marks conflicts over the capture and capitalization of data. Mirrors—understood as sites for making and liberating multiples—synthesize key elements of modern information political economy and praxis. We have rarely been good at facing our doubles: Narcissus dies of starvation by the edge of a pool, Dorian GreyGray lacerates his mirror painting and stabs himself in the heart, and so too is modern integrity put in peril by the proliferation of the copies of our many selves. That said, what happens behind the mirror—in the invisible back end end that manages metadata and structure—may be more contentious than what happens in front of it.

Duplicating files has always been political (e.g., counterfeit Roman coins, Lutherian theses, East German facsimiles, Xeroxes of the Pentagon Papers), but data mirroring suggests a new contentious hidden infrastructure for duplicating and distributing data and their identifying metadata. The metadata intensifies the politics of mirroring, since every act can be seen by some and hidden from others. Legal struggles have accelerated over the battle to control and reform peer-to-peer networks and copyright regimes. Overzealous prosecution of open-culture activists has been attributed to{{Maybe "identified as" or "indicted for"?}} driving no less than the recent tragic suicide of Aaron Schwartz, who copied academic journal articles to freely available mirrored databases. Other household names, such as WikileaksWikiLeaks' Julian Assange and the NSA's Edward Snowden, speak to the profound visibility of recent information activism. The

problems and potentials of mirroring are unlikely to disappear anytime soon. Mirroring belongs to an ancient tradition of acting by reflecting and replicating, copying and distributing. Once reserved for the scribes and technicians, copying-and-pasting has become perhaps the most powerful quotidian practice in everyday computing. Mirroring magnifies the significance of transparency, openness, and visibility through replication—*glasnost redux*, indeed.

See in this volume: analog, cloud, culture, digital, flow, hacker, internet, memory, surrogate

See in Williams: aesthetic, behavior, bureaucracy, capitalism, charity, collective, common, consumer, exploitation, idealism, labour, management, media, organic, popular, society, taste, technology, work

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{{The two highlighted items were not cited—keep anyway?}}

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