REFERENCE, REPRESENTATION, AND THE MATERIALITY OF DOCUMENTS [5]

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lntroduction

For the past decade l have been interested in a growing field of study about documents, what they are, what they do, about the processes or events of documentation, how they happen and how they function. ln a Latourian spirit l have written about documents as active agents, and in a Deleuzian spirit have paid more attention to what they do rather than to what they mean. Recently l have developed a concept of documentality, which refers to the capacity and power of documents in their arrangements with other elements of networks, or assemblages, to generate marks, signs, or traces. My focus on the materiality of documents has drawn inspiration from the documentary movements of the late nineteenth and early twentieth century, especially from the work of Paul Otlet and Suzanne Briet, who, as cvcry student of library and information science now knows, insisted on material objects as documents, undoubtedly the most famous being Mme Briet's antelope. Especially important for me are Michel Foucault's meditations on the constitutive effects of "disciplinary writing", that "whole apparatus of writing" that made possible "the constitution of the individual as a describable, analysable object" (Foucault, 1979, p. 190). Examples of what documents do don't get much more powerful than this.

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Taking documents seriously swims against some still-powerful currents in library and information science. ln Dejlating Information (Frohmann, 2004) l argued that the "sense-making user" emerged as the hera of the discipline's theoretical imagination upon Brenda Dervin and Michael Nilan's announcement of their "alternative paradigma", which "posits information as something constructed by human beings" (Dervin, Nilan 1986, p. 16), in their 1986 ARIST contribution, "lnfomiation Needs and Uses". They did not challenge a long-held cognitivist tradition of viewing information as mental content. The novelty of their "new paradigma" consisted in a new description of the user's cognitive processes; we were introduced to sense-making beings whose information needs were analysed as conceptual incongruities and ruptures in cognitive structures. The new paradigm - and there certainly was a shift in research interests, to "everyday information needs and uses" - did little to change the prevailing conception of documents as mere carriers of and conduits for human thought, a way of thinking according to which documents are as uninteresting andas useless to LlS theorizing as containers of smuggled drugs are to the pusher. Even though the materiality of documents was recognized in Michael Buckland's concept of "information as thing" (Buckland, 1991), humans remained privileged; even if not produced by humans (think of tree trunk rings) it can be a document only for humans. And when significance is granted to documents, the view of them as mere vehicles, conveyers, or conduits often persists; documents are venerated precisely because the freight they so faithfully bear is so precious and primary: human consciousness, mental and intentional substance, the content of human speech, transported from mind to mind, from the interior of one person to the interior of another - a view nicely articulated by David Levy in his Scrolling Forward: documents are "talking things"; writing "is the act of breathing 01,1r breath into the dust of the earth"; it is "an act of ventriloquism, of throwing the voice into an inanimate object"; documents are "bits of the material world we have taught to talk"; they are "exactly those

things we create to speakfar us, on our behalf and in our absence" (Levy, 2001, p. 23, 25, 26).

Library and information scientists are of course not the only culprits; the lowly status of the document owes much to a long philosophical tradition tracing a line from Descartes to Hume, Kant, Husserl and their contemporary phenomenological and hermeneutical successors, a line that privileges the consciousnessof individual, human subjects over brute, inanimate matter. But that philosophical tradition has been under sustained attack for over 80 years. One might start with Ludwig Wittgenstein, who in the early 1930s said: "There is a kind of general disease of thinking which always looks for (and finds) what would be called a mental state from which all our acts spring as from a reservoir" (Wittgenstein 1969, p. 143). One could turn to Jacques Derrida's notion of the trace-structure of the sign; he argues that any instance of a sign is always infected by its iterability, that is, by the possibility of being reinscribed in other chains of signs. The iterability of signs undermine attempts to fix and stabilize their meaning by mental acts of projecting onto them what is present to consciousness. And Friedrich Kittler, arguably the most provocative and profound contemporary media theorist, deconstructs the idea of life breathed into writing by the human soul by analysing the soul itself as a product of what he calls the Aefschriebesystem of 1800 (Kittler, 1990), a historically contingent and now superseded set of cultural programs specific to the prevailing media systems of information storage and processing that governed what could be written and said. ln the media system of 1900, after gramophone, film and typewriter, "the new, technologically implemented materiality of writing ... no longer lends itself to metaphysical soul building" (Winthrop-Young, Wütz, 1999, p. xxvii). The decentering of human consciousness and subjectivity can also be traced through Foucault, Deleuze, Latour, and many more. My point is not that one cannot argue for the centrality of the human subject, but that in our contemporary intellectual situation that position can no longer be naively assumed.

My aim here is not to plea for an end to discrimination against documents. Today documentation finds many friends in many sites, among them the neo- documentation movement inaugurated by Buckland, Niels Windfeld Lund, and Boyd Rayward, the programs in documentation at the Universidade de Tromsø and here, in Toulouse, in collaboration with Brazilian colleagues in Rio de Janeiro. Also important are the annual conferences of the Document Academy, the vibrant research areas in the history of the book and in theoretically sophisticated archival studies, and the German materialities of communication movement. My aim is instead to investigate the productive possibilities of the tension between the document's materiality and its representational function, a tension resolved too easily by the naive view of document as mere conduits. Put another way, my aim is to explore some complexities of the document's relation to the real.

As a preliminary indication of the problem, I briefly draw your attention to this tension in the work even of those most strongly insistent on the importance of the materiality of the document. Mme Briet's antelope is as material a document as can be, and, once caged and available for presenting evidence, its documentary function flows from that materiality. But even though the "cataloged antelope is an initial document and the other documents are secondary or derived" (Briet, 2006, p. 11), it "immediately becomes weighted down under a 'vêture de document", as Briet put it (p. l0). When the cascade of secondary documents become the focus of attention, the documentary status of the antelope is reduced to its position as the first link of a chain of manufactured, secondary, but ultimately more important documents.

Bruno Latour, a champion of the importance of documents, wants to "let reality return to our speech" (Latour, 2008, p. 9). He opposes the Lockean "bifurcation of nature" into two irreconcilable worlds of primary and secondary qualities, the former alleged to be purely abstract, geometrical, scientific, and

objective, and the latter perceived properties, existing only in the human mind, hence subjective. He argues for a science that by adding "equipment and attention to the world" addresses the objective reality of our sensed world. Yet in his earlier work, science begins, not with direct perception of the world, but with the shift of attention from the world to its manufactured representations. The construction of scientific facts depends upon a cycle of accumulation of documents in centres of calculation (Latour, 1987). Here the emphasis is not on adding equipment and attention to the world but on a modality of uniquely human practices of domination, often not easily disentangled from warfare and violence.

ln the remainder of this paper, I present three scenarios intended to illustrate this tension between the document's materiality and its representational function.

The Visible Human Project

The US National Library of Medicine's Visible Human Project "was established in 1989 to build a digital image library of volumetric data representing complete, normal adult male and female anatomy" (National Library of Medicine (U.S.) n.d.). The project is available on the Web. You can explore the male and female datasets by manipulating different views, for example, slices of the bodies by moving through them from the top, front, or side. Many research groups with purchased access to the datasets have built greater interactive functionalities. Catherine Waldby writes: "Blood vessels or intestines can be traversed as if the user is flying through narrow tunnels". The skeleton can be traversed as if flying at low levei through a forest of bones.

> ...the virtual corpse can be animated and programmed for interactive simulations of trauma, of human movement, of fluid dynamics and of surgery. The heart can be made to beat, the veins to bleed, the flesh to bruise and lacerate" (Waldby,

> 2000, p. 16). It is a cybernetic mode of documentation taking the form, as Waldby puts it, of the 'transfiguration of [the] human body into digital substance' (p.6).

The male body belonged to Joseph Jernigan, a convicted murderer on death row in Texas who consented to the use of bis corpse for research purposes before bis execution in 1993. His was among the over 3,000 cadavers available annually for consideration by the Center for Human Simulation, a research team contracted in 1991 to find cadavers suitable for representing the normal human.

The data were captured in the following way. Jernigan's body was first given a full MRI scan to establish a template for the body's volume, then frozen in blue gelatine at -85ºC, and sectioned into four pieces, which were given separate CT and MRI scans. "After that", Waldby reports,

> the body was systematically and very finely sliced into oblivion, the slices falling at the same points at which the CT scan had optically "dissected" the body. Beginning with the feet, the frozen sections were fitted into a dissection device ... which planed the cada ver at 1 mm intervals. After each planing the cross-section of the remaining body section was digitally photographed ... Each of these photographs was then converted into a computer data file, and their position in the overa/1 body registered according to the initial template. This technique effectively obliterated the body's mass, each planed section dissolving into sawdust due to its extreme desiccation. The process took nine months (2000, p. 14).

Waldby notes that the "attractiveness of the VHP trace for medicine" consists in its ability to serve as a surrogate of the living human body, "a virtual test subject upon which procedures can be trialled and practiced" (p. 78). The VHP's photorealism is essential

to this purpose, but it has a pricc: thc obliteration of the document's referent, in this case, Jernigan's body. The VHP presents a very dramatic illustration of the complex relationship between the power and importance of the document's materiality - which in this case is exercised by its powerful digital functionality - and two kinds of representational functionality: its indexical relation to Jernigan, and its symbolic relation to the universal human. The VHP's symbolic gain is its indexical loss: the obliteration of the referent. The VHP belongs to the long history of the "sacrificial economy" of anatomy, whereby knowledge of the universal human is gained through devaluing the humanity of its indexical referents - early cadavers belonged, like Jernigan's, to criminals - before dismembering them entirely (p.52). Like its documentary historical predecessors, the VHP's documentality inscribes a specific type and degree of violence in its mode of operation, while at the sarne time its digital materiality partakes of a "biosemiotic economy" that repairs a debt to its indexical referent (p. 78-80). "Like all digital objjects", Waldby argues, Jernigan's digital body "can sustain transformation without loss, change without cost, nothing clone to [it] has consequence because everything can be returned to initial conditions" (p. 79). The medical uses of the VHP "repair in representation the disavowed debt which biomedicine owes to the bodies used in imaging" (Waldby, 2000, p. 79), a “repair” not available to, for example, the anatomical atlases of the Renaissance, because they lack indexical reference to individual bodies, which, in the VHP, is irreducible.

Briet's and Latour's work reveals tensions between documentation's simultaneously turning toward and away from the world. Waldby's work shows the degree of violence that can be visited through the document's materiality upon what it represents. The lesson for documentation studies is: locate specific documentary régimes or practices on a line extending from domination of or violence to the world, to cooperating or corresponding with it.

Glass Flowers

My second scenario is a wonderful example of how a document's representational fidelity can undermine, cancel, and even sever connections to its referent. l refer to the famous Glass Flowers of the Ware Collection in the Harvard Museum of Natural History, and rely upon Lorraine Daston's contribution to her fine anthology, Things That Talk (Daston, 2004).

ln 1890, Harvard botanist George Lincoln Goodale commissioned Bohemian glass artisans Leopold Blashka and his son Rudolph to produce glass models of plants for use in advanced botanical instruction. ln the following fifty years of painstaking work, they produced over 3,000 models representing 847 plant species. ln his 1894 investigation of the models' "botanical accuracy", Goodale's colleague Walter Deane observed that the "eye is first attracted by the great beauty of the flowers", an experience shared by the over 175,000 annual visitors to the Ware Collection since then.

To see how the remarkable beauty of the glass flowers undermined their reference to the real, individual flowers they modelled, one needs to know why Goodale valued them for botanical instruction. His pedagogical ethos demanded that plant morphology be mastered by "the detection of all disguises which conceal [the] identity of [the] plant" (Goodale, quoted in Daston, 2004, p. 249). Students learned to recognize the essential features of a plant's genus by meticulous observation of many individual specimens. Goodale scorned the more common pedagogical dependence upon drawings intended to represent the genus by abstracting from those differences. His students learned morphology "without the lazy trot of an already idealized illustration" (p. 249). But real specimens are not always available; Cambridge winters are long, and as Goodale observed, "flowers are perishable, when dried they are distorted, when placed in alcohol they are robbed of their color" (Harvard University Herbaria). The "hypertrophied accuracy" (Daston, 2004, p. 249) of

the glass flowers served Goodale's pedagogical purposes as well as, if not better than natural specimens.

The glass models fared less well in the competition between phanerogamists like Goodale and his cryptogamist opponents (Phanerogams are flowering seed plants; cryptogams reproduce by spores (e.g. algae, lichens, mosses and ferns). The epistemological value of the models was low even before they were commissioned because the taxonomical legitimacy of exactly those ideal-type illustrations abominated by Goodale had eclipsed that of the authentic, individual specimen (p. 248). The kind of beauty displayed by flowers – "showy appearances" too closely linked to vulgarity and public fascination (p. 251-252) - were folded into the cryptogamists' argument for the scientific irrelevance of phanerogams. The tide of botanical scholarship turned towards Goodale's rivals: "ln addition to their feminine, decorative associations ... flowers had come to symbolize the exoteric, the superficial, the epistemologically shallow, and the screamingly obvious" (p. 252).

But if for cryptogamists the beauty of real flowers contaminated botanical scholarship, the uncanny beauty of the glass models offered an even more powerful argument. The tension between botany and beauty is stretched to the breaking point when the beauty of the specimens' documentary representation trumps that of its referent. When the document itself exhibits a wondrous singularity, its referent is eclipsed; the document represents nothing but itself. Daston notes that "when the Glass Models definitively became the Glass Flowers, they ceased to be scientific" (p. 252). And when they possessed the singularity of precious works of art, where seeing photographs won't do, where one must make a pilgrimage to see the real thing, they became wonders of pure appearance – "the wonder of the copy that itself cannot be copied, which somehow is more authentic than the original". They carne to "defy representation" (p. 254).

The moral of the Glass Flowers for documentation is that the material properties of the document, especially those making it a singular, unique thing, can overpower the referent to the point that its representational function is thoroughly subverted, even if it represents its referent with extraordinary fidelity.

Second Life Avatars

My final scenario features online environments. Ken Hillis is interested in what I would call the documentary practices of telepresence (Hillis, 2009). His examples are the 3D virtual world Second Life, and ritualistic and fetishistic gay/ queer webcam practices. His analysis employs Charles Sanders Peirce's concept of the indexical sign to investigate the power the digital sign exercises over its referent. The symbol is related to its object by convention, the icon by resemblance, but 9f the index, Pierce says: "An Index is a sign which refers to the Object that it denotes by virtue of being really affected by that Object" (Peirce, 1960, p. 248). ln another text, he expands:

> if the sign were not related to its object except by the mind thinking of them separately, it would not fulfil the function of a sign atai/. Supposing, then, the relation of the sign to its object does not fie in a mental association, there must be a direct dual relation of the sign to its object independent of the mind using the sign ... the sign signifies its object solely by virtue of being really connected with it. Of this nature are as natural signs and physical symptoms. I cal/ such a sign an índex, a pointing finger being the type of the class. The index asserts nothing; it only says "There is takes hold of our eyes, as it were, and forcibly directs them to a particular object, and there it stops (Peirce, 1960, p. 780-787).

The power of the index to "take hold of our eyes" is nicely illustrated by Hillis's example: “Robinson Crusoe's panic upon

seeing a man's footprint impressed in the sand of a beach flows from the power of the index to directly indicate the reality of the object" (Hillis, 2009, p. 107).

A Second Life avatar is an indexical sign; its object is the player facing the screen, who is in direct, existential, causal relation with it. The naive interpretation of participation in multi-user virtal environments (MUVE) as mere escapism into a reality of pure representation regrettably trumping engagement with the real world fails to recognize real-world consequences, such as, in Second Life, gaining and spending real money, or facing institutional discipline or even job loss for online transgressions (Hillis tells the tale of a teacher who, in using Second Life as an educational platform, responded to a student's avatar shooting a virtual dart at the teacher's avatar by launching "a program during the next class that caused the offending student's avatar to burst into flames and disappear" (Hillis, 2009: 131). A participant at the conference where this story was told observed that at her university, the student would have been suspended and the teacher fired. Other real-life consequences were noted nearly twenty years ago, in Julian Dibbell's report of a "rape in cyberspace" (Dibbell, 1993). Yet Web environments create special affordances for what Hillis calls "the hallucinatory desire to make something present not only stand in for something absent but also to make it, experientially, equivalent to what has gone missing, remains elsewhere, or can never be" (p. 117). By functioning as the use value of the digital trace, this desire drives the exchange value of the trace's commodity form (Hillis prefers "trace" to "index", given the latter's other meanings, especially those lists and arrangements so familiar to library and information studies.). The political economy of the digital trace thrives on desire for an inaccessible referent, a form of experience structured by the simultaneous presence and absence characterizing the trace, perhaps most easily grasped by considering webcam sexual practices. As Hillis puts it, this is a "use value in itself that also fosters belief in magical/virtual forms of transformation" (p. 117),

a belief that supports the exchange or commodity value of the digital trace, which Hillis describes as a form of "trade in the fetishism identified by Baudrillard as a 'fetishism of the signifier' itself" (p. 117- 118).

A very general moral of this scenario, similar to that of the glass flowers, is that in both cases, the materiality of the document can sever connections to its referent. Second Life Avatars do not trump their real-word reference through representational fidelity, but through a conjunction of documentary machines and forces, in this instance those of commodification and desire, which can shift the balance between the absence and presence structuring the trace to the point of fetishism of the signifier, thus "positioning the trace as a virtual object superior to the [...] referente" (p. 118).

Conclusion

My scenarios illustrate three axes along which representation can trump reality: violence, aesthetics, and desire. ln "The Age of the World Picture", Heidegger warned us of the dangers: "Representing", he writes, is "an objectifying that goes forward and masters" (Heidegger, 1977, p. 150). ln the sarne spirit, Michel Serres opens his book The Natural Contract (1995) with a powerful image from Goya: two combatants armed with clubs battling each other, but knee-deep in mud. They fight, oblivious to the earth swallowing them up. Serres finds in this ghastly image the catastrophe of forgetting "the world of things themselves" (Serres, 1995, p. 2), because "[w]hat was once local- this river, that swamp- is now global: Planet Earth" (p. 3). Our wars, our economies, the footprint of humans gathered into what he calls "immense tectonic plates" (p. 18), and our culture, which he says "abhors the world" (p.3) inflict immense, global, and catastrophic violence upon "the world of things themselves". He argues for making a contract with that world: a natural contract. We need to think beyond our representations to a concern about things - in Latour's terms, a shift of attention from matters of fact to matters of concern. I want

to situate my topic here, in the interests of attention to and respect for this fragile world of things, because reducing violence to it is now a matter of concern for the collective survival of all things, human and non-human.

References

BRIET, S. **What is documentation?** Tradução: R. E. Day, L. Martinet, and H. G. Anghelescu. Lanham, Md.: Scarecrow Press, 2006.

BUCKLAND, M. Information as thing. **Journal of the American Society for information science**, v. 42, n. 5, p. 351-360, 1991.

DASTON, L. The glass flowers. *In:* DASTON, L (ed.). **Things that talk**: Object lessons from art and science. New York: Zone Books; Cambridge, Mass.: MIT Press, 2004. p. 223-54.

DERVIN, B., NILAN, M. lnformation needs and uses. **Annual Review of Information Science and Technology**, v. 21, p. 21:3-33, 1986.

DIBBELL, J. **A rape in cyberspace**: or how an evil clown, a Haitian trickster spirit, two wizards, and a cast of dozens turned a database into a society. Yhe Village Voice, dez. 1993.

FOUCOULT, M. **Discipline and punish:** The Birth of the Prison. Tradução: A. Sheridan. New York: Random House, Vintage. 1979.

FROHMANN, B. **Deflating information**: From science studies to documentation. Toronto; Buffalo; London: University of Toronto Press, 2004.

HARVARD UNIVERSITY HERBARIA. **The Archives of Rudolph and Leopold Blaschka and the Ware Collection of Blaschka glass models of plants**.

HEIDEGGER, M. The age of the world picture. *In:* HEIDEGGER, M. (Ed.). **Science and the Quest for Reality**. The question

concerning technology and other essays. New York: Harper and Row, Harper Colophon, 1977, p. 115-54.

HILLIS, K. **Online a lot of the time**: Ritual, fetish, sign. Duke University Press, 2020.

KITTLER, F. A. **Discourse network**s, 1800/1900. Tradução: M. Metteer and C. Calif.: Stanford University Press, 1990.

LATOUR, B. **Science in action**: How to follow scientists and engineers through society. Cambridge, Massachusetts: Harvard University Press, 1987.

LATOUR, B. **What is the sryle efmatters efconcern?** Amsterdam: Van Gorcum. 2008.

LEVY, D. M. **Scrolling forward**: Making sense of documents in the digital age. New York: Arcade, 2001.

NATIONAL LIBRARY OF MEDICINE (U.S.). **N.d. Fact sheet**: The visible human project. 2024.

PEIRCE, C. S. **Collected papers**. C. Hartshorne; P. Weiss (Ed.). Cambridge: Belknap Press of Harvard University Press, 1960.

PEIRCE, C. S. On the algebra of logic: A contribution to the philosophy of notation. **American journal of mathematics**, v. 7, n. 2, p. 180-196, 1885.

SERRES, M. **The Natural Contract**. Tradução: E. MacArthur, W. Paulson. Ann Arbor The University of Michigan Press, 1995.

WALDBY, C. **The visible human project**: Informatic bodies and posthuman medicine. London; New York: Routledge, 2000.

WINTHROP-YOUNG, G.; WÜTZ, M. Translator's introduction: Friedrich Kittler and Media Discourse Analysis. *In:* KITTLER, F. A. **Gramophone, film, typewriter**. Stanford University Press, 1999.

WITTGENSTEIN, L. **Preliminary studies for the "Philosophical Investigations' generally known as the Blue and Brown books**. Oxford: Basil Blackwell, 1969.