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Reassembling Scholarly Communications

Histories, Infrastructures, and Global Politics of Open Access

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13 Libraries, Museums, and Archives as Speculative Knowledge Infrastructure

Bethany Nowwiskie

Two basic tenets of Afrofuturism have shaped my understanding of digital libraries, archives, and museums as twenty-first-century knowledge infrastructure. The first is a question; the second, a set of twinned assertions. The alarming geopolitical and environmental inflection points at which we currently find ourselves demand—more clearly than ever—that we answer the *question* in the affirmative, and that we actively encode Afrofuturist *assertions* from the surface to the bones of our digital libraries: from the deep structures in which we store, deliver, protect, and preserve cultural and scientific data; to the ontologies and metadata systems through which we produce information and organize, rationalize, and seek to make it interoperable; to those platforms and interfaces for discovery, contemplation, analysis, and storytelling that must be forevermore inextricably algorithmic and humane—predicated on decisions, understandings, and ethical, empathetic engagement with communities understood both locally and “at scale”: communities large and small; present, past, and yet to come. It is in this light that I present five spectra along which digital cultural heritage and open science platform-builders must more consciously and collaboratively design enabling knowledge infrastructure, if we mean to use information technology to meet present social challenges and future global and personal responsibilities.

A Question and Two Assertions

In a 1994 *Flame Wars* essay, cyberculture critic Mark Dery both coined the term “Afrofuturism” and posed a question at the heart of the speculative art, music, fiction, poetry, fashion, and design that meet in this rich and longstanding nexus of Black diasporic aesthetics and inquiry. The question is this: “Can a community whose past has been deliberately rubbed

out, and whose energies have subsequently been consumed by the search for legible traces of its history, imagine possible futures?"¹ Afrofuturism's answer to the question has been a defiant yes, but victims and descendants of the transatlantic slave trade are not the only communities marginalized by archival absence and who have been subject—in our inherited systems of knowledge representation as well as in their digital manifestations and evolutions—to problems of structural misrepresentation, exploitation, thwarted agency, and neglect.

Our responsibility as stewards of sources and scholarship, and as designers of cultural heritage infrastructure that serves the broadest cause of social justice and the public good is not merely to address that first, daunting task (the provision of "legible traces" of the past through more broadly accessible special collections, archives, and archaeological, environmental, and genetic datasets) but to enable the independent production, by our varied and often marginalized constituencies, of community-driven, future-oriented *speculative collections*. By this I mean not merely visions for change and social uplift, as crucial as those may be, but also wholly new ontologies and epistemologies: inventive archival assemblages, structures, or re/presentations of human experience and understanding. Can new knowledge representation systems challenge Western, progressive, and neoliberal notions of time as an arrow and regularly ticking clock? Can they counter the limiting sense our digital library and museum interfaces too often give, of archives as incontrovertible evidence—the suggestion, reinforced by design, that the present state of human affairs is the inevitable and singularly logical result of the accumulated data of the past; that our repositories primarily look backward to flat facts, not forward to imaginative, generative, alternate futures or slantwise through branching, looping time?²

Two assertions by Afrofuturist thinkers may usefully direct our response to contemporary challenges and opportunities in digital library interface and systems design.³ The first is jazz saxophonist Shabaka Hutchings's distillation of the core message of musician and performer Sun Ra: the deceptively simple idea that the fundamental marker of liberty is found in a people's ability to build knowledge infrastructure: "the fact that communities that have agency [are] able to form their own philosophical structures"—in other words, not just to receive and use information within epistemological bounds defined by those in authority (whether they be scholars and

teachers, legislators and corporate overlords, or librarians and technologists), but instead actively to shape knowledge at its springs and on its surfaces, for purposes of safeguarding, discovery, delivery, argument, and understanding.⁴ The second is theorist and artist Kodwo Eshun's conception of historical, archival, and archaeological sources—including intangible cultural heritage, such as language and song—as functional and generative, active technologies in themselves. Eshun understands the objects of cultural heritage not as static content, merely to be received, but as still-running code or tools that hum with potential. Our historical repositories contain active instruments and artefacts ripe for *scratchadelia*: traces of the past intended to be *used anew and transformed even as they are played back*—just as surely as a scratch artist makes productive dissonance from a phonograph record.⁵

How might Eshun's technological reframing of the longstanding historiographical concept of a “usable past,” Hutchings's location of liberation and community agency in the capacity not merely to access information but to create independent philosophical infrastructure, and Dery's summation of the speculative goals of Afrofuturism become informing principles for the next generation of digital library, museum, and archives builders? What considerations must be taken up, if we mean to attempt an implementation of these ideas in the form of access, storage, and preservation mechanisms, ontologies and knowledge representation systems, and platforms for discovery, (counter)narrative, and display?

Five Spectra for Twenty-First-Century Knowledge Design

I offer here a nonexclusive list of questions and concerns for future-oriented and liberatory digital library design, figured as spectra along which responsible creators of user interfaces and open-access infrastructures might more consciously and actively position their work. In no case are the ends of a spectrum self-cancelling notions; in other words, we may usefully imagine malleable systems that open themselves to multiple, simultaneous applications and axial orientations. The most fruitful outcome of any design exercise considering digital knowledge spectra like these would be increased awareness of the implications of such concerns on individuals and communities: the possibilities they welcome and foreclose; the dangers they forestall and fail to see; their fundamental generousities and parsimony.

Enlightenment versus Afrofuturist Structurings

Popular and even scholarly imagination of library organizational schemes rests in an Enlightenment-era crystallization of singular, dominant understandings: the best that a rational society accepts and knows. It is no accident that we appeal to “authority files” in creating interoperable metadata and often find it simplest to conceive of and share information in stemmatic, parent-child relationships and tabular form. But new possibilities for locating intersections and melding of multiple taxonomies and inheritances—alternate logical systems and naming schemes—through approaches leveraging linked open data and topic modeling bring us closer than ever to enabling an Afrofuturist vision of actualized community agency in the formation of digital knowledge infrastructure. This is fundamental liberty that would reach its fullest expression in the creation of grassroots, independent, broadly accessible, machine-readable philosophical framings, beholden to no one. We might invest in such a thing. However, in an era of climate data denial, derogated scientific and scholarly expertise, rising white supremacy, and so-called fake news, as John Holmwood covers elsewhere in this volume, is it not also our responsibility to construct libraries that reflect and prop up those structures for knowledge sharing, truth-seeking, and enlightened liberalism that the academy has long evolved and optimized, namely the forms and methods of our sciences and disciplines?⁶ If so, how can indigenous knowledge and resistant or subaltern premises also be made central to digital library design? How might we honor and elevate grassroots, marginalized viewpoints structurally, without providing platforms that simultaneously open themselves to political disinformation campaigns and to ideologies of violence and oppression?

Historico-Evidentiary versus Speculative Orientation

Similarly, prototyping exercises that address the basic *temporal* and *evidentiary* alignment of our libraries could help us produce improved discovery interfaces and richer platforms for argument, storytelling, and display. Present designs more often suggest the primacy of singular, retrospective and historical orientations, and too few afford users the opportunity to create and share multiple speculative or futurist arrangements and understandings. The fundamental questions are these: do our digital libraries present their contents as fact, or as fodder for interpretation? Do they adequately

indicate gaps and absences, and allow for their exploration as a force? Do they allow us to look backwards *and* ahead?

To answer these questions in the form of prototype designs requires us to delve beyond the interface layer in digital knowledge infrastructure and into the fundamental nature of our archives. Wendy Duff and Verne Harris, in seeking a new basis for archival description, argue against positioning “archives and records within the numbing strictures of record keeping ... which posit ‘the record’ as cocooned in a timebound layering of meaning, and reduce description to the work of capturing and polishing the cocoon.” Instead, they call for “a liberatory [descriptive] standard ... posit[ing] the record as always in the process of being made, the record opening out of the future. Such a standard would not seek to affirm the keeping of something already made ... [but rather] open-ended making and re-making.”⁷ In considering the orientation of our libraries toward digital objects as evidence, we should also heed Anne Gilliland and Michelle Caswell’s call for increased attention to the “archival imaginary”: those absent (perhaps missing, destroyed, merely theorized or wished-for) documents that traverse aporia and offer “counterbalances and sometimes resistance to dominant legal, bureaucratic, historical and forensic notions of evidence that ... fall short in explaining the capacity of records and archives” to move us. Designing for such imaginaries would counter “strands of archival theory and practice [that] maintain an un-reflexive preoccupation with the actual, the instantiated, the accessible and the deployable—that is, with records that have ... evidentiary capacity.” How might “differing imagined trajectories of the future” emerge from records both present in and absent from the past?⁸

Assessment versus the Incommensurate

These questions lead us to the hyper-measured condition of contemporary digital libraries. Comprised of counting machines and situated in the neo-liberal academy, how could our digital knowledge platforms and systems be otherwise? And indeed, thoughtfully designed and well-supported metrics can help us to refine those systems and suit them better to the people who must inhabit them. Their collection is also a necessary, pragmatic response to straightened circumstances. In the face of information abundance, increasing service demands, and limited financial and staffing capacity, assessment measures are instruments through which open-access advocates and cultural

heritage professionals can make the case for resources and show where they are wisely applied.⁹ Measurement is not going away. The challenge for systems and interface designers is to build in ways that enable *humane and ethical quantification* of behaviors and objects that are by nature deeply ambiguous and even ineffable. These include users' complex interactions with digital cultural data and those instantiations themselves: both digitized and born-digital information—records that are continually remediated as they are delivered or displayed. Both the (non-self-identical) objects of study in digital libraries and the experiences we wish to promote with/in them are fundamentally fungible, organic, fluid, and incommensurate, one with another.¹⁰

Transparency versus Surveillance

Patron records have emerged, through the latter half of the twentieth century and most sharply in the United States after the passage of the 2001 USA PATRIOT Act, as among the most closely guarded and assiduously expunged datasets librarians hold. So must twenty-first-century digital knowledge infrastructure design keep privacy concerns paramount.¹¹ Even as we come to understand technologies of sharing and surveillance as a single Janus-faced beast, it is our legal and ethical obligation to create mechanisms by which we can uphold core library values and protect users' rights to read, explore, and assemble information unobserved. Our designs must also respect individual and community agency in determining whether historical or contemporary cultural records should be open to access and display in the first place—ideally fostering and encouraging local intellectual control.¹² But an added challenge is to shield while also opening up—ensuring that digital library infrastructure can contribute to salutary watchdog and sunlight initiatives, meant to promote transparency, accountability, and openness in government and corporate archives—and while balancing cultural and individual rights to privacy against the commons and the public good. What interface designs can serve to make these deep structural decisions and commitments apparent?

Local versus Global Granularities

The fundamental paradox of the Anthropocene is that we must henceforth hold local unpredictability and planetary-scale inevitability simultaneously

in mind—and come to understand humankind as both infinitesimally small and fragile, and as a grim, global prime mover.¹³ How do our digital library systems help us to bridge that conceptual gap, so crucial to fashioning futures that use both scientific data and empathetic understanding to their fullest extent? We require design experimentation, at all levels of our open knowledge infrastructure, that addresses the relationship of big-data processing to small-data interpretation—that understands broad, systemic thinking and local application or inquiry as part of a unified endeavor, and that can help us identify trends even as we explicate edge cases and tell the stories of exceptional experience. Can our platforms for discovery more clearly link small narratives to massive datasets? Can we design tools that help users understand visualization not as an impartial algorithmic result but as a dialogic process, an act of interpretation (one of many possible acts) that will always, necessarily, be shaped by the unique course of its own creation?

* * *

These are only five among many possible vectors for design thinking that might more fully open twenty-first-century knowledge infrastructure to broader community ownership, richer scholarly application, and more creative, speculative ends. Conceptual frameworks that differ from Afrofuturism might usefully direct experimentation and prototyping in alternate ways. Indeed, the responsibilities of designers of digital libraries, museums, archives, and data repositories—like the sample spectra I present here—stretch out across a wide expanse, reaching backward into histories we have yet to tell and forward to each future we may craft.

Notes

1. Mark Dery, “Black to the Future: Interviews with Samuel R. Delany, Greg Tate, and Tricia Rose,” in *Flame Wars: The Discourse of Cyberculture*, ed. Mark Dery (Durham, NC: Duke University Press, 1994), 180, <https://doi.org/10.1215/9780822396765-010>.

2. See Deborah A. Thomas, “Time and the Otherwise: Plantations, Garrisons and Being Human in the Caribbean,” *Anthropological Theory* 16, no. 2–3 (2016): 177–200, <https://doi.org/10.1177/1463499616636269>; and the work of Rasheedah Phillips on Quantum Black Futurism (Rasheedah Phillips, “Future,” in *Keywords for Radicals: The Contested Vocabulary of Late Capitalist Struggle*, ed. Kelly Fritsch, Clare O’Connor, and A. K. Thompson [Oakland, CA: AK Press, 2016], 167–174); and as described by Hyunjee Kim in “An Afrofuturist Community Center Targets Gentrification,”

Hyperallergic, June 23, 2016, <https://hyperallergic.com/307013/an-afrofuturist-community-center-targets-gentrification/>. These issues are taken up in more depth here: Bethany Nowviskie, "Speculative Collections," *Bethany Nowviskie* (blog), October 27, 2016, <http://nowviskie.org/2016/speculative-collections/>; they are informed by my own early design experimentation on the Temporal Modeling Project: Bethany Nowviskie, "Speculative Computing: Instruments for Interpretive Scholarship" (PhD diss., University of Virginia, 2004), <http://search.lib.virginia.edu/catalog/7h149q13w>; and described in the "Temporal Modeling" section of Johanna Drucker and Bethany Nowviskie, "Speculative Computing: Aesthetic Provocations in Humanities Computing," in *A Companion to Digital Humanities*, ed. Susan Schreibman, Ray Siemens, and John Unsworth (Oxford: John Wiley & Sons, 2007), 431–447, <https://doi.org/10.1002/9780470999875.ch29>.

3. Here and throughout, when I refer to "digital library" design, I mean to encompass fundamental design problems pertaining—despite their rich differences, readily acknowledged—to digital libraries, archives, museums and galleries, thematic research collections, and open repositories of data and the products of scholarship.

4. Shabaka Hutchings, "Journey Through Jazz (an Interview by Stewart Smith)," *Red Bull Academy Music Daily*, April 4, 2016, <https://daily.redbullmusicacademy.com/2016/04/shabaka-hutchings>. Hutchings references Kodwo Eshun, Sun Ra, and John Akomfrah's 1996 documentary "The Last Angel of History," all discussed here: Bethany Nowviskie, "Everywhere, Every When," *Bethany Nowviskie* (blog), April 29, 2016, <http://nowviskie.org/2016/everywhere-every-when/>.

5. See Kodwo Eshun, "Further Considerations on Afrofuturism," *CR: The New Centennial Review* 3, no. 2 (2003): 287–302, <https://doi.org/10.1353/ncr.2003.0021>; and Kodwo Eshun, *More Brilliant Than the Sun: Adventures in Sonic Fiction* (London: Quartet Books, 1998); Laurent Fintoni, "A Brief History of Scratching," *FACT Magazine: Music News, New Music*. (blog), September 24, 2015, <https://www.factmag.com/2015/09/24/a-brief-history-of-scratching/>.

6. On this subject, see Chad Wellmon, *Organizing Enlightenment: Information Overload and the Invention of the Modern Research University* (Baltimore, MD: Johns Hopkins University Press, 2015).

7. Wendy M. Duff and Verne Harris, "Stories and Names: Archival Description as Narrating Records and Constructing Meanings," *Archival Science* 2, no. 3 (2002): 263–285, <https://doi.org/10.1007/BF02435625>.

8. Anne J. Gilliland and Michelle Caswell, "Records and Their Imaginaries: Imagining the Impossible, Making Possible the Imagined," *Archival Science* 16, no. 1 (2016): 53–75, <https://doi.org/10.1007/s10502-015-9259-z>. See also Michelle Caswell, "Inventing New Archival Imaginaries: Theoretical Foundations for Identity-Based Community Archives," in *Identity Palimpsests: Archiving Ethnicity in the U.S. and Canada*, ed. Dominique Daniel and Amalia S. Levi (Sacramento, CA: Litwin Books, 2014), 35–56.

9. Among grassroots initiatives in this sphere is the Digital Library Federation's Assessment Interest Group (the DLF-AIG), which includes a team focused on the "cultural assessment" of digital libraries and archives: Digital Library Federation, "Digital Library Assessment," *DLF* (blog), 2018, <https://www.diglib.org/groups/assessment/>.

10. See Jerome McGann, "Imagining What You Don't Know: The Theoretical Goals of The Rossetti Archive," Institute for Advanced Technology in the Humanities, University of Virginia, 1997, <http://www2.iath.virginia.edu/jjm2f/old/chum.html>; and Jerome McGann, "Marking Texts of Many Dimensions," in *A New Companion to Digital Humanities*, ed. Susan Schreibman, Ray Siemens, and John Unsworth (Oxford: John Wiley & Sons, 2015), 358–376, <https://doi.org/10.1002/9781118680605.ch25>.

11. Joan Starr, "Libraries and National Security: An Historical Review," *First Monday* 9, no. 12 (2004), <https://doi.org/10.5210/fm.v9i12.1198>.

12. An excellent example here is the work of Kimberly Christen on the Mukurtu CMS: Mukurtu, "About," accessed May 1, 2019, <http://mukurtu.org/about/>. See also her "Tribal Archives, Traditional Knowledge, and Local Contexts."

13. This is an idea I take up at greater length in "Digital Humanities in the Anthropocene," *Digital Scholarship in the Humanities* 30, no. suppl_1 (2015): i4–i15, <https://doi.org/10.1093/llc/fqv015>.

