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Zombies in the Library Stacks

LAURA R. BRAUNSTEIN AND MICHELLE R. WARREN

We begin in the library stacks—between the rows of shelves that keep books off the floor, out of piles, in order. In this narrow space, we are in the literal *interstices* of infrastructure: “standing between” (*inter* [between] + *sistere* [to stand]). From this vantage point, the library itself is a structure standing between its past as a shelter for books and its future as a digital network. Indeed, as libraries make space for the computers needed to access digital resources, some are directly displacing the stacks by sending printed books and their shelves to more distant buildings.

The digital humanities are entangled with these shifts. The expansion of library staff positions bearing titles that include the phrase *digital humanities* is just one aspect of DH’s place within libraries’ infrastructure. DH depends on the broader universe of things digital and digitized, from preservation to databases to social media. In this sense, DH is part of the digital infrastructure displacing the stacks. Yet even as physical stacks seem increasingly decentered in the library, *the stacks* have morphed into a metaphor that characterizes essential digital functions. In this essay, we browse through the metaphors in an effort to understand infrastructure as a nexus of material, conceptual, and social relations. We aim to calibrate some of the stress points between DH and libraries.

Our essay is not a case study of a DH project in a library (although we are very interested in those) but rather a conceptual exploration of how the vocabulary that we use to describe infrastructure is yet another element of infrastructure that shapes DH research.¹ Our reflections have grown out of a long-standing relationship in which we both worked in the library, but neither worked in DH. A decade later, DH has changed our work considerably even though we still have the same jobs—librarian (Laura) and faculty member (Michelle). This article fuses our respective trajectories into DH in order to engage with some of the fundamentals of institutions and infrastructures.

On Metaphor

The library stacks remind us that all infrastructure incorporates human social relations because their architectural forms are designed to enable people to move through their aisles to access books. Just as the term *computer* has denoted a person, a place, and a thing all at once, “the stacks” encompass domains otherwise considered separate and incommensurable.² Like computers, the stacks point to the enfolding of the social within the material. As Sheila Anderson has pointed out, even efforts to recognize social formations often end up focusing on material forms.³ We take up this entanglement to align ourselves with Susan Leigh Star and Karen Ruhleder, who ask *when* is infrastructure: “we hold that infrastructure is a fundamentally relational concept. It becomes infrastructure in relation to organized practices. . . . Thus we ask, *when*—not *what*—is an infrastructure.”⁴ In this conception, *the stacks* can stand for different things at different times. They can also migrate in and out of the library, tracing malleable relations among things, technology, and people.

Even as we try to speak of the literal physical stacks, we are already in the realm of metaphor: “a pile of stuff” (*stakkr* meaning “haystack”) has become a “structure for organizing a pile of stuff” (*stakkr* meaning “barn”).⁵ This transition happened without our conscious knowledge until just now, when we went digging into etymology as recorded in a finding tool, the dictionary, whose authority we have learned to trust. However, that finding tool is also a piece of knowledge infrastructure that calls for analysis.⁶ And so, beginning in the stacks means beginning with metaphor as yet another mechanism that effaces the work of infrastructure.

As a rhetorical figure, metaphor shapes what can be thought. When it functions properly, we do not even notice the epistemic shifts that occur when one domain or scale substitutes for another. When infrastructure mobilizes metaphor, these slippages of self-effacement proliferate in ways both harmful and inspiring. As Michelle has written elsewhere: “Metaphors matter because they give subliminal structure to our knowledge systems. Sometimes they sharpen our perception of ‘what is really happening.’ At other times, they distract us from underlying forces. A new metaphor might reflect a new reality; truly successful metaphors generate reality itself.”⁷ Metaphor serves as software so subtle that it can be mistaken for hardware. Critical infrastructure studies aim to expose these processes.

A particular kind of metaphor known in sociology as a *zombie category* brings us to conceptualize *the stacks* as a complex social formation. The concept has been defined by Ulrich Beck and Elisabeth Beck-Gernsheim as “living-dead categories which blind [sociologists] to the realities and contradictions of globalizing and individualizing modernities.”⁸ They argue that the continued use of these categories that “have died yet live on” prevents researchers from truly understanding modern social life.⁹ Beck elaborates on the example of “the family”—a category whose middle-class

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European sense is still widely valued even though that sense does not correspond to most people's experience of family life.¹⁰ For Beck and Beck-Gernsheim, the zombie category has a mostly negative force. For them, the task of scholarship is to dispense with outmoded categories in order to discover how society really works.

Yet the zombie category also has a positive capacity. For Nicholas Birns, categories that are no longer understood as originally meant and yet are still in use produce pluralities that can free us from the homogenizing march of time and ideas.¹¹ While Birns refers to Beck, he moves in the opposite direction. In this approach, zombie categories reveal how meanings can change even when the words do not. Their analysis can help uncover the work of vocabulary itself as part of our scholarly infrastructure. Zombies remind us that obsolescence does not mean the end (zombies may be dead, but they just keep coming). Persistence and resurgence can be advantageous. "Zombies in the stacks" thus means that we can value new and old meanings at the same time; they can coincide rather than compete. If we see the stacks as equal parts steel and discourse, we might be able to predict their movements. In this way, we further the understanding of infrastructure as something that does not just *exist* but *becomes*.

Our focus on the stacks derives from our focus on relationship between DH and the library. Just as the stacks are no longer just shelves, the library is no longer just a building. David Weinberger has made the influential suggestion that libraries should function less like portals and more like platforms: "A library as platform is more how than where, more hyperlinks than container, more hubbub than hub."¹² Shannon Mattern, however, has pointed to the limitations of the platform model by detailing the implications of the metaphor: "The platform doesn't have any implied depth, so we're not inclined to look underneath or behind it, or to question its structure." Mattern goes on to show how various metaphors for the library "obfuscate all the wires, pulleys, lights and scaffolding that you inevitably find underneath and above that stage—and the casting, staging and direction that determine what happens *on* the stage, and that allow it to function *as* a stage."¹³ In lieu of this flattening, Mattern imagines multiple intersecting scales: "Thus we need to understand how our libraries function *as*, and as *part of*, infrastructural ecologies—as sites where spatial, technological, intellectual and social infrastructures shape and inform one another." Similarly, Emily Drabinski calls the library a "structuring machine" that not only organizes existing knowledge but determines what counts as knowledge and to whom.¹⁴ DH lives in the interstices of this machine.

The stacks, like the library as a whole, are not just repositories. They are epistemological structures that order the questions we can ask of them. In the following sections, we browse through three of the stacks that sustain DH: first, the physical library stacks that are part of the information architecture that arranges scholarship; second, the technology stack of globalized computing that distributes scholarship; and finally, the social stack of human relationships that make everything possible. Each stack reveals something different about DH and the patterns of labor

embedded within it.¹⁵ Drawing on the sociological lessons of the zombie category, we aim to disaggregate *the stacks* as discursive assemblages, thereby exposing the mechanisms through which infrastructure effaces its own social labor while also rendering social labor a visible component of infrastructure.

Physical Stacks

Load-bearing bookshelves shape the library's architecture from the inside out. In a popular, well-illustrated book *The Book on the Bookshelf*, Henry Petroski provides an engaging history of Western shelf technologies, from ancient scrolls to medieval chained books to modern steel engineering to rolling compact shelves.¹⁶ Petroski highlights the architectural arrangements that accompany changes in shelving technology. In a similar vein, Lydia Pyne describes how the cast-iron book stacks manufactured by Snead & Co. around the turn of the twentieth century transformed library architecture and services.¹⁷ Standardized shelves enabled libraries to house more on-site collections, which in turn allowed open-stack browsing. Cast-iron stacks were the literal infrastructure that held up buildings, as the New York Public Library infamously discovered when it proposed to remove book stacks from its flagship Fifth Avenue research building.¹⁸ In this case, the stacks could not be superseded by a futuristic renovation. The feat of engineering that made the stacks bear the weight of the building as well as the books illustrates how zombie categories maintain use-value through time.

When the stacks are not actually bearing weight, they become symbols of technological change. Compact shelving, where passage between the stacks is reduced to one opening at a time, are one mechanical solution to storage. But when space runs out, books and shelves move off site. In other cases, shelves move not to accommodate more books but more people, as square footage is dedicated to digital workspaces, administrative departments, coffee bars, and other social arrangements within the library. Furthermore, in all these pressures to maximize the dynamic uses of square footage, the availability of e-books through university press subscriptions and consortia collections enables libraries to increase their holdings while they shift from physical to digital shelf space.

These changes in the stacks' role provoke a range of emotional responses. Some express unbridled optimism for the positive impact of the "learning commons."¹⁹ Others lament the loss of the "leisurely contemplation" of wandering through the stacks.²⁰ Both ends of this spectrum of feeling about the *stacks* occlude the inequities built in to both past and future. Many traditionally built stacks, for example, are not wheelchair accessible; high and low shelves can be out of reach for a variety of reasons. The golden age of browsing that many look back to was also an era of stratification and exclusion.²¹ And the discourse of serendipitous browsing, in which a scholar "discovers" material "hidden" in the stacks, effaces the labor of library workers who have organized material so that it can be discovered.²² Meanwhile, the newly

articulated spaces that have displaced some stacks cannot possibly deliver on all that their promoters have promised.²³ Amidst all these tensions, the stacks and the print materials that they house persist beyond the exaggerated reports of their death (i.e., that libraries are “throwing away all the books”).

The stacks as bookshelves thus function as a zombie category in the sense that they are made to mean something in the present that they did not mean in the past. When they are identified with a nostalgia for a time before algorithms, they are made to obscure the ordering principles that they have always supported in one way or another. In this guise, they are part of the emotional infrastructure that enables digital technology. Even as they seem to be just standing there, they are compensating for the epistemic shifts wrought by the digital. These are zombie moves. And DH, as a scholarly practice that takes place partly in the library, relies on them—both conceptually and architecturally.

Technological Stacks

In today’s library, the problem of shelf space for scholarship goes beyond the physical stacks to encompass the digital. Just like print scholarship, DH projects need physical homes. But it is not always obvious where in the university they should be “shelved.” Platforms like Shared Shelf from JSTOR (which enables the storing and sharing of media files) make this issue apparent in the name itself (the platform’s new name, JSTOR Forum, is another physical metaphor with a new set of technical and social implications). DH scholarship is thus embedded within the stacks of digital processing that are gathered within the library but are not centered there—or anywhere. As such, DH infrastructure includes a multitude of technological stacks. Each is already a metaphor built on a metaphor, alerting us to the highly probable presence of zombie categories.

In digital processing, the software *stack* is the layering of operations required to produce a result. It begins with the hardware that stores basic code, which enables an operating system to support more code in the form of programming languages, which organize more code as software, which enables interactions with inputs from various sources (keyboard, touch screen, microphone, etc.), which are processed back into the software for further distribution to other stacks. The operations need to take place in a fixed sequence in order for the applications to achieve their intended outcomes.

The ubiquity of technology has made the software stack a highly portable metaphor. John Herman has recently reflected on how “stack logic” has spread far from software applications to characterize almost any organized function with multiple dependent parts.²⁴ Herman begins and ends with John Daugman’s influential “Brain Metaphor and Brain Theory,” where Daugman shows how theories of brain function have tracked innovations in material infrastructure throughout history, from hydraulics to combustion engines to computers.²⁵ This observation shows both the

limits and powers of metaphors, which slip from analogy to description only to become constraining blinders on our powers of observation. Daugman's historical view amounts to an illustration of how zombie categories keep eating the brain.

Similarly, the software stack seems to be taking over the world. The most elaborated conception of this process is Benjamin Bratton's *The Stack*, where computing structures become a global megastructure that transcends national boundaries and serves as a new form of sovereignty. The global stack is totalizing: it rises from raw materials mining at the bottom to hardware manufacture as the next layer, and thence upward to network infrastructure to web programming to user interface design to tech support. It has emerged as "an accidental megastructure, one that we are building both deliberately and unwittingly and is in turn building us in its own image."²⁶ This Stack is not just a new technology, but operates as "a scale of technology that comes to absorb functions of the state and the work of governance."²⁷ Bratton's stack-as-world has six layers: Earth, Cloud, City, Address, Interface, and User. Their layered interdependence defines a global infrastructure that orders every aspect of life.

The Stack as global megastructure reveals how the library itself functions as a zombie category whenever it is considered primarily as a repository. Library and information studies have long recognized that the library already includes interconnected technology stacks. Core functions like accessing books can take place via licensing with multinational corporations that provide password-protected digital resources. Browsing takes place via database rather than via shelf reading. Internal services, such as communication, record keeping, and financial management can be outsourced to cloud-based enterprise systems. In a Möbius strip of interlocking processes, the library both contains technology stacks and is subsumed by them. When it comes time to find a shelf for DH scholarship, we need to account for both dimensions. We need to continue to stack layers rather than displacing the old with the new—or treating the new (a digital project) like the old (a book to put on a library shelf). If we don't recognize the zombies here, we'll be lost in the stacks. But if we get rid of the zombies, we'll have nowhere to go. DH scholars need a stack-savvy approach to navigating the interstices that the library has become.

Social Stacks

Technology stacks and physical stacks rest on and are supported by social stacks—the people without whom there is no stacking. In the library, the social stack encompasses a whole range of activities often considered *services*: from the shelf reading that keeps the books in order to metadata curation that keeps the online catalogue functioning to database training for students and faculty. In response to DH, many libraries, even small ones, have created new services assigned to the "DH librarian." While appearing to reflect substantial changes in research methods, including a new collaborative ethos, the role is often haunted by the zombie category of the librarian

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as support staff. Many scholars are used to the invisibility of library services: they don't see shelves, just books. As a result, various kinds of social labor go unrecognized, which in turn compromises DH scholarship. Yet project development and preservation are social problems as much as technological ones.

The service model effaces all kinds of labor, none more perniciously than emotional labor. As Paige Morgan has written ~~recently~~, this labor is not only invisible but generally viewed negatively—and yet the functions of managing expectations, calculating risk, and boosting confidence are essential to a successful DH project.²⁸ It is the DH librarian who most often has to handle any number of questions that begin “why can't you just . . .” (“ . . . scan everything and put it online?” or “. . . maintain my website after I retire?”). Whether these questions are rhetorical or answer-seeking, they demand emotional labor that goes unrecognized as labor because it does not seem to lead to a tangible product. DH librarians must also manage their own emotions in the face of marginalization, as Alexis Logsdon, Amy Mars, and Heather Tompkins have elucidated. In order to maintain social relations, they invest labor in performing certain styles of collaboration regardless of personal feelings.²⁹ Emotional labor is in fact integral to all the stacks and thus to DH infrastructure: it is a form of expertise. By incorporating the social into our understandings of the stacks, it might become possible to redistribute emotional labor more equitably throughout the stacks.

The visibility of labor correlates to the attribution of credit, another dimension of the social stack that sustains DH. Martin Paul Eve has recently pointed out how authorship serves as “a proxy to credit many different labour systems that were necessary for the work.”³⁰ The collaborative nature of DH scholarship, therefore, should entail authorial naming strategies similar to scientific papers, for which the list of contributors can stretch to double and even triple digits. Yet even the contributor roles taxonomy (CRediT) referenced by Eve does not include the social and emotional contributions often made by librarians.³¹ What would have to change, culturally and socially, for scholarly discourse in the humanities to value and credit this labor? The DH community is in the midst of articulating—although we have not yet equitably implemented—a model for acknowledging and compensating those who labor in the DH stacks.³² We remain too closely tied to the zombie category of the solo author, a model that has in fact never accurately reflected the social (and gendered) nature of scholarship.³³ Lauren Tilton and Taylor Arnold discuss in their essay for this volume how even in seemingly collaborative spaces like library DH labs, the force of the solo author as a legible category of scholarly credit tends to efface collaborative labor.³⁴ DH has yet to absorb models of collaborative creation that would routinely recognize the whole social stack as coauthor.

Finally, institutional arrangements for DH directly affect social relations and therefore the nature of scholarship. Where there are staff positions and administrative units that include the phrase *digital humanities*, the social stack is aligned with resource allocations. Conversely, the absence of such titles can create a negative

emotional relationship to DH, producing a sense of scarcity or “center envy.”³⁵ Yet successful DH programs, initiatives, and teams also arise organically out of social connections instead of being planned by a centralized hierarchy. Crucial roles are often filled by contingent laborers in the university’s knowledge economy: graduate students, postdocs, and people in grant-funded term positions. Even as we recognize these inequities both within and across institutions, we can also recognize that there is no idealized arrangement for DH that would transcend all local circumstances. In the end, DH depends first and foremost on social relationships that are not wholly determined by org charts. The risk in this approach, as Elizabeth Rodrigues and Rachel Schnepfer warn in their chapter in this volume, is that social relationships can lack institutional support and commitment: “Personality-dependent collaborations are not infrastructure; they are lucky happenstance.”³⁶ The “lucky” nature of social relationships can help transcend institutional boundaries, however. Pinpointing the *when* of infrastructure is thus especially important for the social stack, so that relationships are dynamic rather than static, capable of change rather than fixed to familiar hierarchies.

Social relations remain shadowed by zombie categories whenever they rely on individualistic, monetized, or fixed models of value. Scholars need to engage with the library not as clients exploiting a service but as partners in an ecosystem of knowledge. If, as Sheila Anderson argues, infrastructure is conceptualized as itself a form of research, all participants’ intellectual contributions become visible parts of a complex stack that integrates the spatial, technological, and social. Absent such mutually informing engagement, Anderson posits, digital humanists themselves will be “defined as servants and not as scholars.”³⁷ The social stack works like a zombie when it animates old hierarchies that the ethos of DH was meant to end.

Stack is the tie-breaker in the old DH debate between *hack* and *yack*.³⁸ As Laura has observed elsewhere, the people who make things and the people who critique things all need to stack things.³⁹ The stacks are a useful metaphor for DH because they press together people, places, and things. Of course, unraveling metaphors is not a foolproof approach to exposing the realities of labor or the material challenges of preservation. However, it is a necessary step in the critical analysis of infrastructure. All the stacks—physical, technological, social—are fundamental to libraries’ infrastructure. Assessing their work in the knowledge economy is the responsibility of everyone who works in the stacks: librarians, faculty, students, programmers, administrators, and so on. Librarians bear a special responsibility as the designated guardians of library infrastructure. Positioned at the hub of collaboration, where shelf space meets budgets, they have unique capacities to interpret the rapidly changing landscape of digital scholarship. Further, the library can directly restructure ethical collaboration as a defining feature of the digital humanities, as Roopika Risam, Justin Snow, and Susan Edwards have argued.⁴⁰ We can also borrow categories from critical pedagogy, such as the *progressive stack*, a technique for disrupting group

habits by intentionally “stacking” participation in new ways.⁴¹ On the way, however, let us be aware of zombies and the work that they do. Every metaphor will have its consequences.

Notes

1. Warren, ByrneSim, and Braunstein, “Remix the Medieval Manuscript.”
2. Abbate, *Recoding Gender*; Shetterly, *Hidden Figures*; and Harris and Shetterly, “Human Computers at NASA.”
3. Anderson, “What Are Research Infrastructures?”
4. Star and Ruhleder, “Steps toward an Ecology of Infrastructure,” 113.
5. “stack, n.,” *OED Online*.
6. Warren, “Post-Philology.”
7. Warren, “Philology in Ruins.”
8. Beck and Beck-Gernsheim, *Individualization*, xxiv. The term has spread kind of like an infectious outbreak whose origins are hard to trace. Many vectors do ultimately lead back to Beck, but unfootnoted appropriations abound. The most recent thought-provoking entry point is Lauro, *Zombie Theory*.
9. Beck and Beck-Gernsheim, *Individualization*, 27.
10. Beck and Beck-Gernsheim, *Individualization*, 204.
11. Birns, *Theory after Theory*, 65. For more details, see Warren, “Ar-ar-archive.”
12. Weinberger, “Library as Platform.”
13. Mattern, “Library as Infrastructure,” From a media studies perspective, however, Anable has recently suggested that “platform studies” can open rather than foreclose deeper inquiry; see “Platform Studies.”
14. See Drabinski, “Standard Practice.”
15. Each of the following sections is adapted and expanded from Braunstein, “Open Stacks.”
16. Petroski, *The Book on the Bookshelf*.
17. Pyne, *Bookshelf*.
18. Pogrebin, “Public Library Is Abandoning Disputed Plan.”
19. For example, Holland, “21st-Century Libraries.”
20. For example, “Banishing the Books.” Most recently, see Zaretsky, “The Welcoming Labyrinth.”
21. For example, Knott, *Not Free, Not for All*; and Beilin, “The Academic Research Library’s White Past.”
22. Verhoeven, “As Luck Would Have It,” especially 13–18; and Bowker and Star, *Sorting Things Out*.
23. Storey has described a “commons contagion” that has led some university administrators to transform spaces into learning commons without full engagement of library stakeholders: “Commons Consent.”
24. Herrman, “New Technology Is Built on a ‘Stack.’”

25. Daugman, “Brain Metaphor and Brain Theory.”
26. Bratton, *The Stack*, 5.
27. Bratton, *The Stack*, 7.
28. In “Not Your DH Teddy-Bear,” Morgan addresses how changes in research infrastructure can have emotional consequences.
29. Logsdon, Mars, and Tompkins, “Claiming Expertise from Betwixt and Between.”
30. Eve, “On Being Open in Practice.”
31. “CRedIT.”
32. Despite many attempts to draft a “Collaborators’ Bill of Rights,” few of these have been widely implemented. See “Collaborators’ Bill of Rights” (<https://archive.mith.umd.edu/offthetracks/recommendations/>) Maryland Institute for Technology in the Humanities, and “A Student Collaborator’s Bill of Rights,” UCLA Center for Digital Humanities.
33. This was ably—and ironically—demonstrated by the *#thanksfortyping* Twitter thread, which itself was started by a male academic after historian Alexis Coe had written about her research into academic inequity in “Being Married Helps Professors Get Ahead.”
34. Tilton and Arnold, “What’s in a Name?”
35. Schaffner and Erway, “Does Every Research Library Need a Digital Humanities Center?”
36. Rodrigues and Schnepfer, “After Autonomy.”
37. Anderson, “What Are Research Infrastructures?” 6.
38. Nowviskie excavates (and puts to rest) this zombie metaphor in “On the Origins of ‘Hack’ and ‘Yack.’”
39. Kim, “6 Questions for a Digital Humanities Librarian.”
40. Risam, Snow, and Edwards, “Building an Ethical Digital Humanities Community.”
41. For example, Gannon, “The Progressive Stack.”

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