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Big Digital Humanities

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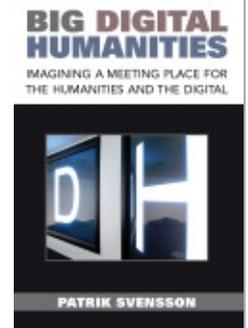
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Three Premises of Big Digital Humanities

Whether or not we believe in a big-tent or stretched-tent notion of the digital humanities, an essential question concerns the size and scope of the field. This chapter further substantiates the conception of big digital humanities. This inclusive, intersectional, and infrastructural notion of the field is based on ideas that connect to the history of digital humanities, its current challenges, and its institutional trajectories. Considerable value can be gained from seeing the digital humanities as a meeting place or contact zone supporting multiple modes of engagement between the humanities and the digital. Moreover, the digital humanities needs to be a site of engagement for the humanities writ large.

Indeed, to whatever degree it is possible to find a productive institutional, scholarly, and practical “solution” for the digital humanities, big digital humanities makes a good candidate. It is based on a large and inclusive notion of the field and builds on multiple traditions and modes of engagement. Such a model must be sensitive to local conditions and cannot draw on a single institutional model, although suggestions can be made.

The big digital humanities project has considerable potential and range. It engages deeply with the humanities disciplines, has a multifaceted intellectual engagement with the digital, contributes to high-quality scholarship and methodological innovation, and provides humanistic infrastructure. Moreover, big digital humanities reaches out to the rest of the university and the world, serves as a model for a proactive humanities, and functions as a meeting place and contact zone.

It is also a day-to-day business characterized less by big words than by a combination of individual work and collaboration, coding, technical development, long-term research processes, institutional politics, and administration. The driving force is intellectual and technological curiosity, and the vision is not that everyone should be doing everything but rather that there is much power in bringing together competencies, infrastructures, and ideas. A

key driving force is participants who are passionate about very different things in this large enterprise.

This chapter details three basic premises of big digital humanities:

- The field and the humanities disciplines benefit from engaging broadly with the digital.
- The digital humanities needs to be a meeting place with broad humanistic and deep academic investment.
- The digital humanities is well placed to be a site of engagement for all of the humanities.

The notion of intellectual middleware exemplifies how these perspectives can be brought together.

Why Big Digital Humanities?

Can the digital humanities ever be sorted out in terms of its institutional buildup, identity, and trajectory? The picture presented in chapters 1 and 2 might suggest that too many epistemic traditions, historical hang-ups, organizational interests, specialist communities, and intentions are at play for the field to ever come to any kind of common direction. Indeed, the scope of what is labeled *digital humanities* is quite large, ranging from the particulars of encoding schemas to the future of the humanities. The field can also at times seem almost frantically obsessed with metalevel reflections, self-referentiality, and staking out different positions in a never-ending online debate. In September 2013, Alan Liu published a three-thousand-word blog entry reiterating a two-and-a-half-year debate with Steven Ramsay.¹ Liu's well-written and forward-looking account displayed a field involved in a long-term struggle with itself, almost always manifested online. The ongoing debate, which can be traced back at least twenty-five years, demonstrates that the field is not static and stale but also shows that dialogue can become repetitive and not necessarily productive.

There is no contradiction, however, in maintaining some of this energy and intermediacy while creating more stability and better channeling the field's potential. We need to take into account the fact that the humanities and the digital are entangled in different ways and that a simultaneous intellectual and technological engagement is required to push some of the most interesting research questions and infrastructural challenges. Furthermore, whether

or not we like it, the digital humanities has become a place for thinking about the humanities and a number of issues closely related to the development of the academy. This comes naturally if the digital humanities is seen as a meeting place and a place for empowerment and innovation. It would be a mistake not to embrace this possibility.

The solution is to be intellectually and materially driven, allow for multiple modes of engagement between the humanities and the digital, and make the digital humanities into an inclusive meeting place and contact zone. Epistemic inclusiveness is not just a way of getting almost everyone together; it may also actually be the only way for the humanities to engage long term with the digital in a comprehensive and meaningful way. This is not about being nice in the manner of digital humanities discourse (even if niceness is important) but rather about incorporating the different perspectives, tensions, and competences necessary to build knowledge at the intersection of the humanities and the digital. Sharpness is critical. Through being placed in between, the digital humanities can avoid becoming a new institutionalized discipline yet secure a mandate to be discipline-like, network-like, and center-like at the same time. The field needs an infrastructural and intellectual core with integrity and stability as well as a way of drawing on the collective richness of the humanities and other knowledge domains to support intellectually and materially strong and daring work.

Three Basic Premises of Big Digital Humanities

First, it is not only important but essential that the digital humanities and the humanities disciplines connect with the digital across several modes of engagement. We need to look at information technology as an object of analysis, an expressive medium, and a tool, and these modes are becoming increasingly blurred. Where they come together, we will likely find some of the most interesting future work. Separating critical studies of the digital from the building and development of technological structures is particularly unfortunate. The digital humanities has the potential to bring together data, tools, expressions, and research questions, in the process making significant contributions.

Second, the digital humanities needs to function as a meeting place and a contact zone to enable simultaneous engagement with these different modes of engagement and infrastructures as part of a broad humanistic and deep academic investment. This is particularly relevant in the context of a considerably larger field than has existed in the past. Further, we need to take seriously the

responsibilities and expectations that come with this enlarged territory. The field has historically existed in part institutionally and operationally between, and the choice between building on and expanding this model and becoming more like a discipline would seem to be a decisive question for the digital humanities. There will not be only one decision or model, and all institutional contexts are not the same, but the concept of the field as a nonterritorial meeting place is arguably the most productive way of meeting many of the challenges that lie ahead: managing the enlarged community, making the most of the richness of perspectives, taking on complex scholarly and technological challenges across disciplines and epistemic traditions, and making a strong case for infrastructures for the humanities. In some ways, parallels exist between this function and that of a humanities center or advanced institute.

Third, the digital humanities is uniquely placed to become a site of engagement where all the humanities can think about and manifest their future role—a kind of laboratory and platform for the humanities. This is part of the potential of the digital humanities, and many newcomers to the field seem to be attracted by this opportunity. This is, however, a contested function of the field in several ways. Not all digital humanists look at the field in this way, and from the outside—in particular, from other humanities institutions—giving the digital humanities this privileged role might not seem to make sense. While the digital humanities is not the only platform for developing the humanities, it can certainly be an important player, and taking on this role is a responsibility.

Interlude 4: Virtual Weddings

My interest in humanities and the digital partly comes from a range of pedagogical projects in which I was involved in the late 1990s and early 2000s as faculty at the Department of English at Umeå University, during the beginnings of HUMlab. We explored how technology could help us tackle challenges, inspire students, and challenge traditions. My thinking was particularly influenced by the Virtual Wedding project, which arose out of an interest in developing the equivalent of a bachelor's degree in English at Umeå University. We especially sought to break down the barriers between linguistics, literary studies, and cultural studies. Students normally had to choose just one of the three, but we wanted to work with the many rich themes that reached across these boundaries. "Weddings" was one such culturally, linguistically, and literarily embedded theme. Some of our earlier work on web-based pa-

pers for teacher trainees had shown us that collaborative online publishing was motivational. In addition, we were aware that digital media and formats could help the students and us to do things differently. Much academic convention is locked into specific formats.

After some deliberation, we chose to use virtual worlds as an arena for the project. We created a world in ActiveWorlds, a platform whose interface combined a game-like graphical world, a browser window, and a chat window. It also featured in-world building, meaning that students could fairly easily create content. Each semester we chose a different theme: in addition to weddings, themes included the city and re-creating realities. Students formed small groups, approached the theme in different ways, wrote hypertext papers, and created manifestations of their work in the world. The world started out empty except for a tower built by the teachers: the students built everything else. At the end of the semester, they presented their work simultaneously at an event in the lab and in the virtual world. For the first student presentation, about thirty people were present in the virtual world and twenty in the physical lab. The world was accumulative, which meant that new students could see what earlier students had created.

The Virtual Wedding project taught us many things. We realized how much is built into the academic paper format in terms of how one expresses oneself, what kind of media are included, how one thinks about one's own work, and how colleagues look at it. By moving the work into a virtual environment, we created a space for experimentation and empowered students to find their own expressive means and expressions. In some cases, the expressiveness of the work took too much time, while in other cases, students were unwilling to experiment, but overall we found the project quite successful.² ActiveWorlds provided a level of visual detail that was not photo-realistic—it looked fairly good, but the content was cartoonish enough to allow for interpretation and required less effort than would have been necessary for more realistic material. The web browser functionality allowed students to connect and integrate hypertext papers with their world. Qualities such as the level of graphical detail and the integrated web browser demonstrate the importance of material qualities for digital humanities projects.

We also learned that distinct advantages accrue from working collectively in a lab environment. Students helped each other, and the community created included not only them but also local and international participants from different fields, adding significantly to the intellectual discussions. Some stu-

dents participated mostly in a distributed manner (through the virtual world), but the fact that much of the work was physically situated made the process easier. Also, from a teacher's point of view, it was useful to go to the lab and have access to most of the students at the same time. The project also overlapped with other ongoing activities.

This experience informed future projects and our thinking about HUMLab as a space and operation. HUMLab was literally being built and tested out at the time. Even so, the time factor was a challenge, and we were sometimes concerned that the project would detract from other parts of the students' educational program, but it mostly worked out well. Placing this alternative modality within the academic system also posed a challenge. We succeeded partly as a result of the validation that came with a large external grant and partly because one of the participants was a senior director of studies. With the current system for national evaluation of degree work in Sweden (where accreditation comes from an assessment of a sample of degree-related work), implementing alternative modes of knowledge production would seem much more difficult than it was at that point in time.

We also soon realized that at least some of the themes and individual student paper topics possessed a digital inflection. Students had to use a range of tools to create multimodal content for the world, and they engaged with the medium on an almost daily basis. These perspectives and practices merged fairly seamlessly and had a distinct connection to the core of the discipline. In a way, some of these basic sentiments and ideas provided an important foundation for the continued operation of HUMLab and for our thinking of the digital humanities. In addition, the project fostered a number of excellent students who embarked on doctoral projects with a digital inflection.

In some ways, although I never at the time thought of the Virtual Wedding project as digital humanities or humanities computing, this early work on educational technology shaped much of my vision for the digital humanities. As teachers, we were empowered by using technologies to approach the challenge we had identified, and we were enthused to see students doing unexpected things with this opportunity. The technologies were both enabling and constraining, and our practice was simultaneously practical, experimental, and critical. We also found that the project required simultaneous engagement with the digital as a study object, a tool, and a medium. The project was intersectional from the beginning, and interest from local and remote participants from different fields helped the students and us to see important the-

matic and theoretical connections. We had many interested visitors, and we became used to being involved in discussions about the humanities, knowledge production, and the intersection of the humanities and the digital.

I learned that it was important not to be (and come across) as technoromantic and revolutionary when talking to people about the project. My collaboration with Pat Shrimpton, the longtime director of studies who had taught generations of teacher trainees and built up much trust in a range of communities, was rewarding on multiple levels, and she and I complemented each other well. Her technological skepticism (or maybe more correctly, her ready expression of such skepticism) helped me gradually learn to tone down some of the revolutionary speak, which had turned out to be fairly unproductive and would often lead to comments such as “This is not really new. We heard this when they introduced the overhead projectors.”

Premise: Modes of Engagement

The digital humanities benefits from engaging with the digital across many modes of engagement. Specifically, this means that the field engages with information technology and the digital as a tool, an object of study, and an expressive medium. The term *mode of engagement*³ is used to suggest primary and paradigmatic ways in which the humanities and the digital interrelate: study object, tool, and expressive medium.

Digital technology as a tool and methodology has been a primary organizing principle for humanities computing. Although some argue that modeling rather than tools lies at the center of humanities computing,⁴ it does not really change the notion that traditional humanities computing is focused on text, encoding, tool making, and methodology. Modeling is undoubtedly an important part of digital humanities work, but set in an instrumentalist framing it can appear data centric, decontextualized, and focused on perfecting the model in algorithmic and rationalistic terms, rather than stepping outside the model or allowing critical inquiry, research questions, and aesthetic interventions shape or upend the model. With its increased focus on categories such as gender, race, ability, the anthropocene, and the aesthetic, contemporary digital humanities would seem to resist seeing such rationalistic modeling as a central activity for the field. Practice-oriented work in data modeling, however, can be very rich, reflective and useful, and here modeling often assumes an assistive (rather than assertive) role. Because of the strong investment in tool making and data structures, such work may also be a good space for con-

sidering tool making and data design in terms of questioning and drawing on the divisions of model and “real world,” representation and “real world,” and semiotic and material.

The modes of engagement are linked to the epistemic traditions of the humanities disciplines and of the digital humanities itself. Each mode has internal complexity, and the digital as an expressive medium, for example, accentuates a variety of expressive modalities in different disciplines and fields. These are not a simple matter of tradition and choice but are to some extent “hard-wired” into the discipline or field. The digital puts pressure on these assumptions, and there are other good reasons for reevaluating traditional forms of knowledge representation. Big digital humanities can help here. Imagine a lab space where a spatial historian is interacting with a map-based visualization, an architect is building a sonic simulator, an artist is completing a sonic intervention, a textual scholar is displaying textual material on a large display wall, a media scholar is writing a book on media infrastructure, and an interpretative tool for network visualization is being tested. And what if the history department would happen to have a research meeting in the space at the same time? Even if the historians were not primarily invested in these expressive (and interpretative) modalities, they would have difficulty avoiding engagement with them on some level. Furthermore, if the space were friendly and well curated, there would be fruitful opportunities for interaction between groups and traditions.

Given that most research and educational challenges relate to several of these modes of engagement, digital humanities clearly needs to work across all the modes. Indeed, big digital humanities is built on the idea that these modes are intimately and iteratively connected. Furthermore, as different disciplines have different primary modes of engagement, such a model makes it easier to work across all of the humanities. Moreover, a far-reaching multiple-mode engagement is instrumental for enabling the combination of traditionally critical and traditionally technological perspectives. The humanities cannot afford to ignore their critical tradition in relating to digital environments, and these critical perspectives need to be grounded materially and infrastructurally. Infrastructure plays a critical role here, and incorporating multiple modes of engagement makes it easier to imagine and package humanities infrastructure.

Having a multiple-mode engagement between the humanities and the digital is an important and nontrivial premise of big digital humanities. The modes should be seen not as distinct or mutually exclusive but rather as code-

pendent. It is, however, still fruitful to analyze these modes individually as part of understanding the digital humanities and the building blocks required to make big digital humanities.

The Digital as a Tool

In a much-discussed *Science* paper on culturomics from 2010, the authors claim that computational analysis of about five million books enables the study of culture in a way that had not previously been possible. According to the article, culturomics “extends the boundaries of rigorous quantitative inquiry to a wide array of new phenomena spanning the social sciences and the humanities.”⁵ This instrumental use of technology in the service of the humanities, just like corpus tools or geographical information systems, represents a long-standing mode of engagement. Methodologies and toolsets such as culturomics, topic modeling, and timeline tools come with worldviews and assumptions, and the digital humanities needs to engage with such tools both instrumentally and critically. Culturomics, for example, has been heavily critiqued for its hyper-quantitative approach, reliance on Google’s Ngram analysis, and for producing “small answers.”⁶

The instrumental role of information technology seems rather self-evident. Computers and information technology are very capable of handling an increasing set of tasks. Historically, computers have often been seen only as tools, although that perception has changed over time:

In its fifty-year history, the computer so far has been a calculating machine, an electronic brain, a filing cabinet, a clerk, and a secretary. . . . In the 1940s, when the brilliant and elegant John von Neumann, the brilliant and eccentric Alan Turing, and many others were designing the first programmable computers, they were not defining a new medium. They were building super-fast calculating engines to solve problems in science and engineering.⁷

Computers in humanities computing often took on the role of “calculating engines,” and although the focus was not on science or engineering problems, they often became “textual engines.” In contemporary digital humanities, technology is to a large extent still seen as a tool. Massive digitization projects, web-driven applications, online learning projects, and infrastructural efforts tend to have such a focus. Different tool-based efforts are instrumental to dif-

ferent degrees, however, and some tools have a strong interpretative component. Many others seem to be made in the same production house or along the same kind of conceptual framework. One common model is “retrieval”: such tools tend to be built around a query interface, and many still show a very close connection to library catalogs or notecards. Similarly, map-based tools have become increasingly common as the result of a surge of map-based resources, sensor technologies, and geographically oriented systems.

Also underlying the use of computers as a tool may be an ideology of cognition and functionalism.⁸ The instrumental relationship to information technology is nearly a defining property of traditional humanities computing. According to a 2012 *Ars Technica* article, the “digital humanities is, at its simplest, the use of digital tools and processes in the service of the humanities, those academic pursuits that focus on understanding the human condition.”⁹ One important question is the nature of the connection between the academic pursuits and the tools, and tools at times seem to have a life of their own.

The tools envisioned are different from standard tools such as word processing and web browsers. The challenge, as identified by Andrea Laue and others, also involves producing a new set of tools that are less machine-like:

In practice, the symbiotic machine became a problem-solving rather than a problem-posing device. For the most part, that is how the computer continues to function. Licklider’s dream remains largely unfulfilled. Perhaps transforming the computer from machine to tool, from a device that automates mundane mental tasks to one that augments critical and creative thought, is the task now facing computing humanists.¹⁰

Laue’s argument clearly fits within the framework of the computer as machine or tool. In some other varieties of digital humanities—for example, coming from media studies—the instrumental use of information technology does not often extend far beyond standard tools. Here, tools are mainly a means to an end and do not necessarily carry much prominence. In addition, there is often limited interest in creating and developing tools, although this may be changing.

The Web as Platform for Tools

Since the turn of the twenty-first century, a great range of tools and materials have become available over the web, which in many ways has become a

primary platform for digital humanities tools and materials. Digital humanities work has moved away from tool sets and platforms that were more specific and in some cases restricted. The packaging has changed from pieces of software, data files and CD-ROMs to interconnected websites, services, databases and “the cloud.” Digital humanities projects have connected to an infrastructure that is much more modular and less built from scratch. The focus on access in humanities computing and the cultural heritage sector has productively coupled with ideas from social media and web technologies to open up archival spaces that have traditionally been seen as unchanging. In addition, crowd-sourcing and other means of digitization and markup work have become possible.

At the same time, the reliance on the web can be seen as imposing restrictions and constraints. Old-time applications could more flexibly employ the resources of the computer (for example, management of multiple windows), whereas web applications are restricted by the materiality of the web platform. Even though web standards have evolved dramatically, a number of basic properties cannot easily be challenged. One example is the reliance on single-screen deployment for web content, which makes tools designed for several screens uncommon. This may sound like a trivial issue, but in essence, the web has become a new standard format for content and interaction. It borrows much from pen-and-paper logic, so there is a sense of familiarity, but a critical question is how the digital humanities is constrained by focusing on the web and how the digital humanities relates critically to the web as a default platform.

For example, the Digital Resource for Palaeography (DigiPal) developed at King’s College is a web-based resource designed to develop new methodologies for studying medieval handwriting.¹¹ One of the three main parts of the project is a “generalized web framework for the delivery of palaeographical content online.”¹² The project is an excellent example of the conceptually grounded use of technology in the service of the humanities. It is sensitive to the epistemic tradition of palaeography and stresses the importance of providing material results to the users rather than quantitative “black box” results. Consequently, the project shows actual (digitized) letters on a timeline rather than just a plot of frequency or variation. The tool provides obvious added value and is visually and intellectually sophisticated.

However, DigiPal is keyed to the web as a delivery platform. While this makes sense in many ways, it can also constrain the possible space of the tool, particularly since the project has a material grounding and deals with rich and

complicated data. It would make sense for someone interested in looking at individual letters across manuscripts, the development of “hands,” forms of a letter over time, or annotated manuscripts to think carefully about the use of windows and screens. A multiple-screen environment or a floor screen might allow the display of letters across manuscripts in different ways, enabling researchers to “see more” at one time and juxtapose different facets of the material (such as letters and manuscripts). And it is not just about quantity. If someone wanted to discuss in detail the relations between ten allographs, access to ten screens would permit the display of ten examples in high quality, using the screen frames as a way of emphasizing the individuality of the examples. An eleventh screen would allow examples to be miniaturized and moved to that screen before a new series is shown on the other screens. Or the eleventh screen could point to parallelisms or allow overlay or juxtaposition of examples. A more complex display environment, fixed or mobile, would also make it easier to provide aggregated values and visualizations without removing the original material.

Data and Tools

A significant development that is partially tied to the web concerns the availability and production of data.¹³ A massive infrastructure supports online entities such as map services, social platforms, and different types of databases (e.g., archives and online materials). Data can also be systematically collected from online environments, games (e.g., game metrics), tools and methodologies such as eye-tracking equipment (e.g., for analysis of game play or online newspaper reading), multispectral analysis (e.g., reconstruction of the making of art pieces such as paintings), and fMRI scanning (e.g., tracing brain activity associated with different types of reading strategies). Environmental archaeology data can be used for the large-scale aggregated modeling and visualization of prehistorical environments, and data and material about historical sites can be used to create virtual reconstructions.

Naturally, methodology and the critical assessment of data sources and interpretative processes are central here. The same is true of grand projects such as the culturomics approach and the “cultural analytics” platform developed at the University of California at San Diego, which uses quantitative analysis, interactive visualization, and to some degree qualitative analysis to “begin analyzing patterns in massive cultural data sets.”¹⁴ Lev Manovich describes the implications of such an approach:

We believe that a systematic use of large-scale computational analysis and interactive visualization of cultural patterns will become a major trend in cultural criticism and culture industries in the coming decades. What will happen when humanists start using interactive visualizations as a standard tool in their work, the way many scientists do already?¹⁵

Here, very powerful tools are projected, and the cultural analytics research group has some impressive examples,¹⁶ but any alignment with science methodology in this manner should be critically analyzed, as should the hopes invested in visualization and access to large amounts of data. Rob Kitchin points to the urgent need for critical work in this area and to the importance of avoiding polarization between quantitative and qualitative approaches. He suggests an epistemology that brings together the situatedness, positionality, and politics of the social sciences and humanities with quantitative models and methods such as radical statistics and critical GIS.¹⁷ While it makes sense to be skeptical about some of the ideas associated with big data, access to large materials and datasets is not likely to decrease, and the digital humanities can be useful in aligning data-rich methods with careful humanistic consideration. Thomas LaMarre urges the humanities to become involved in setting agendas for this kind of work to avoid “a massively scientific attitude” and notes his reservations in terms of methodology:

For experimenters know that the set-up is directed toward a certain problematic, and if the results are not predictable in advance, they will nonetheless fall in a certain range and register of experience. Without foregrounding some of these issues, I think we risk capitulation to neoliberalism and the university as hedge fund, to put it crudely.¹⁸

This set of concerns is warranted, given the current fascination with big data and with humanists moving into areas such as digitally supported distant reading, network analysis, functional magnetic resonance imaging brain scans, n-gram based analysis, and cultural heritage visualization. Methodological awareness is critical in all these cases. What does it mean to test brain patterns for leisure versus professional reading in a context where the subjects are placed in a tube in a clinical setting? How representative is the Google Books material used for Ngram analyses, and what does this analysis say about the culture in which these texts were created? What epistemic traditions and aesthetic preferences are built into the visualizations we use

and produce? Answering these questions is not a matter simply of maintaining a critical perspective on tools “out there” but of being engaged in critical-creative processes. This is one reason why we need to encourage experimental modalities and critical making.

Designing Tools and Experimental Spaces

A range of digital tools are available for the humanities, and the digital humanities has not yet developed a comprehensive framework, design sensibility, and assessment methodology that allows us to design, critically discuss, and evaluate different kinds of tools in the best possible way.¹⁹ Such a framework may not be possible given the diversity of tools and epistemic traditions, but at the very least we need to foster careful design and the reflective analysis of tools. A consensus seems to exist that the digital humanities has not traditionally focused on design or realized the importance of it, as Johanna Drucker points out:

Blindness to the rhetorical effects of design as a *form of mediation* (not of transmission or delivery) is an aspect of the cultural authority of mathesis that plagues the digital humanities community.²⁰

Earlier work by Drucker and her colleagues at the University of Virginia demonstrates innovation within a conceptual framework, a strong interest in design, and a critical discussion of both the framework and the actual tools. Several of the tools or projects (e.g., Temporal Modeling and Ivanhoe) are situated and carefully described in Drucker’s 2009 book, *SpecLab: Digital Aesthetics and Speculative Computing*. But we have not seen many more interpretative tools of this kind following these early experiments, perhaps because of cost, a strong tradition of more established tools, low adaptation, and possibly limited generalizability over curricula and institutions. We need to allow for the specificity of exploratory work, particular infrastructures and intellectual tools, but also accommodate comprehensive infrastructures and support standardized solutions.

Digital tools can facilitate an experimental and predictive space that goes beyond individual instruments in suggesting an experiential and exploratory approach. The humanities is often portrayed as not having a predictive or intervening role, whereas the sciences are said to attempt to both explain and predict natural phenomena. In looking at the primary interests of natural sci-

entists, social scientists, and humanists, Jerome Kagan distinguishes between prediction and explanation of all natural phenomena (natural scientists), prediction and explanation of human behaviors and psychological states (social scientists), and “an understanding of human reactions to events and the meanings humans impose on experience as a function of culture, historical era, and life history” (humanists).²¹ The use of *understanding* in relation to the humanities does not necessarily indicate a passive role but certainly does not indicate an active one.

Partly in reaction to this view of the humanities, Lars-Erik Janlert and Kjell Jonsson explore the possibility of a cultural laboratory.²² Their vision clearly challenges the understanding of “tool” as a distinct category. They argue in favor of an active, experimental humanities. Dynamic visualization can offer a window to large datasets and possibilities to visualize or enact complex objects of analysis. Interactive tools can help the researcher get an intuitive sense of the models and objects of analysis and allow fast what-if analyses. On a more profound level, researcher interaction can change the models themselves or their parameters, data, and relations, thereby allowing the study of hypothetical correlations or the comparison of outcomes from different models applied to the same object or situations. “Thick,” qualitative models—of detailed environments, objects, processes, and correlations or of unstructured information—can be handled through the use of technology, and complex qualitative correlations can be modeled by massive simulations. Digital, controlled spaces—such as virtual worlds—can be used to facilitate cultural laboratory work. Participants in simulations could be humans or computer-run entities. Real-time interactive data can feed into digitally enhanced research spaces. This is a thought-provoking vision that seems to respond to the call for tools that are interpretative and scholarly as well as to the increasing humanistic interest in engaging with very large datasets.

There is power in imagining new tools, whether they are actually implemented or not. A very useful example is Catherine D’Ignazio’s reflections on feminist data visualization, where she engages conceptually and materially with critical perspectives on visualization.²³ She suggests that we need to find new ways of representing uncertainty, missed data, and data provenance. Furthermore, she argues that we should refer to and represent the material economy associated with data. She asks, “What if we visually problematized the provenance of the data? The interests behind the data? The stakeholders in the data?” D’Ignazio also calls for ways to destabilize visualizations and make dissent possible: “Could we effect visualization collectively, inclusively,

with dissent and contestation, at scale?” Through throwing out these ideas and provocations, D’Ignazio opens up a conceptual and material space that is valuable regardless of whether it results in actual tool building or not at this point. It would seem very worthwhile, however, to take these ideas to prototype or full-on implementations.

In their construction and contextual use, tools reproduce certain assumptions. While generic tools such as word processing programs are more easily construed as neutral, the subjective and epistemic nature of tools is more apparent with interpretative and experimental tools. This does not mean that the epistemic commitments associated with digital tools and their use are well understood or receives enough attention. As Matt Ratto shows, these commitments are particularly relevant when different disciplines and epistemic traditions deal with the same digital objects.²⁴ Epistemic commitments may influence and determine identification of study objects, methodological procedures leading to results, representative practices, and interpretative frameworks. Consequently, specific tools cannot easily be separated from their epistemic context, including research materials and research questions. This contextual view of tools is a central tenet of big digital humanities.

The Digital as a Study Object

The digital is unsurprisingly an object of analysis for the humanities. Linguists, for example, may be interested in the details of taking turns in a specific digital platform or across communication media. Cultural anthropologists with an interest in how we create and sustain identities may want to study these processes in different types of digital environments. Someone in literature may do work on how our brains are affected by online reading on a neural-cognitive level. Robots and drones give rise to philosophical questions about what makes us human and how we regulate nonhuman behavior. A book history scholar may want to investigate attempts at re-creating physical materiality in relation to electronic books.

As these examples show, study objects are not likely to be entirely digital. Indeed, we cannot possibly separate digital manifestations, perspectives, and materials from the human condition that humanists explore. In other words, such study objects and research issues are digitally inflected. For some fields, such as media studies and history of technology, this is a fairly common inflection. The digital as a study object is a very different mode of engagement than is interacting with technology primarily as a tool.

Digital tools can nevertheless shed light on such research issues and materials. The conflation of these modes of engagement—tool and study object—is an important argument for seeing the digital humanities as a multiple-mode meeting place—big digital humanities—instead of a mostly technological or a mostly critical discipline. Furthermore, because such research issues tend to be interdisciplinary and require a technological sensibility, they are likely to benefit from being approached from a position that combines intersectionality and disciplinary depth. And in cases when there is hesitancy toward digitally inflected research problems or methodologies in the disciplines, the digital humanities as a meeting place and infrastructure can empower both individuals and departments.

As the humanities became institutionalized in the late nineteenth and early 20th centuries, links formed between certain objects of study or facets of those objects and certain disciplines. Julie Klein discusses how this process related to development of the relationships between knowledge and science and between amateur and professional as well as the development of often-minute methodologies to handle humanistic objects.²⁵ A single object could be analyzed using the different methodologies strongly associated with the disciplines, but this growth of disciplinary focus and specialization meant that a great deal of synthesis would not necessarily occur.

How does the epistemic ontology of established disciplines relate to today's digitally inflected world? The disciplinary model has faced pressure from an increased interest in interdisciplinary studies and different types of thematically organized research agendas, and according to Cathy Davidson and David Goldberg,

It is easy to see, in hindsight, how disciplines professionalized and specialized objects of analysis. To say that such objects were (under the older regime) disciplinarily driven is to say that disciplinary demands—historical and textual, institutional and official, methodological and epistemological—determined which were legitimate for analysis.²⁶

Interdisciplinary practice calls for objects of analysis that are more diffuse and multifaceted than those disciplinarily conceived. As Drucker points out, a tension exists between this type of object and the established sense of what normally constitutes a valid object of analysis in the traditional humanities: “Traditional humanistic work assumes its object. A book, poem, text, image,

or artifact, no matter how embedded in social production or psychoanalytic tangles, is usually assumed to have a discrete, bounded identity."²⁷

Drucker emphasizes the codependent nature of that identity. One interesting question is whether these codependent identities and diffused objects of analysis are manifested in digital humanities work that primarily sees the digital as a study object. The problem is not necessarily the investment in particular epistemic traditions but rather the gatekeeping and inability to operate deeply across disciplinary boundaries. For the digital humanities, gatekeeping often occurs on behalf of both the humanities disciplines and the digital humanities itself.

This is one reason why it may be advantageous to work with other areas, such as gender studies, that are typically less institutionalized than traditional disciplines, and such areas at times appear to have more energy and willingness to engage. The most important reason, however, is that it is an intellectually productive connection. Working more with areas such as gender studies, ethnicity studies, dis/ability studies, queer studies, environmental humanities, urban humanities, and neurohumanities would thus seem to possess intellectual and strategic potential. While these fields are not fully comparable, they all bring research questions and perspectives that align well with big digital humanities. From the point of view of the digital as a study object, questions of gender, ethnicity, and environment have a very direct bearing. How can we engage with the digital in any capacity as humanists without thinking about environmental perspectives or gendered structures? It is much easier for a broadly conceived digital humanities to do this convincingly, as these perspectives penetrate tools, platforms, and research questions as well as our practice. Consequently, big digital humanities is well placed to engage in some of these collaborative possibilities.

Environmental humanities, for example, engages with technology and mediation in many different ways. The questioning of the commonplace photographic representation of the earth from the outside is a deeply humanistic, digitally inflected matter:

Remote sensing technology does not “see” but perceive the Earth in complicated ways. The resulting images convey the coherence and completeness of photographic pictures but they only emerge through intricate processes of translating large sets of discrete data into consistent visual formats. The processes of generating, aggregating and translating data points into a visual whole are imbued with the ambitions, interpre-

tations and applications of different actors in international and transnational settings.²⁸

This type of research is part of infrastructure studies as well as emerging critical work on digitally driven visualization. The institutional home for such work can be intellectual history, media studies, environmental studies, or science and technology studies, and there are many examples of this line of research. Critique of and reflection on visualization would seem to be a humanistic matter and an area to which the digital humanities could contribute significantly. From the point of view of big digital humanities, such engagement constitutes a necessary component of the making carried out in the field. In other words, the humanities must be critical about its own practices as well as those of others. Traditional science and technology studies can benefit from the material sensitivity and infrastructural know-how (ideally) associated with the digital humanities.

This example also points to parallels with other emerging areas such as software studies, critical code studies, and platform studies that are mostly framed in terms of introducing new or understudied objects of inquiry. Platform studies is described as “a new focus for the study of digital media, a set of approaches which investigate the underlying computer systems that support creative work.”²⁹ Software (in software studies) can be seen as “an object of study and an area of practice for art and design theory and the humanities, for cultural studies and science and technology studies and for an emerging reflexive strand of computer science.”³⁰ Critical code studies “explores the rhetoric, material history, style, and culture of code—aspects that have previously been only marginally discussed in computer science courses and scholarship.”³¹ While all these (and other partly overlapping) areas are concerned with digitally inflected objects, they also engage with the making of software to some degree (although critical code studies arguably does so most strongly). There is potential in invoking the digital humanities to introduce a stronger presence of making and technological engagement in relation to these areas (especially software studies).

The humanities (and the digital humanities) ideally can also bring an increased sense of the broader political and critical context that sometimes seems to be underemphasized in work carried out in these fields. Jussi Parri, for example, points to the lack of political attention in some work in software studies,³² while Dale Leorke has critiqued platform studies for being

constrained by the notion of platform and failing to offer a deep enough theoretical perspective on the platform as a concept and framing.³³ At the same time, the digital humanities can learn from the interest in the “metal” (hardware, code, interfaces) that often characterizes these areas. On a similar note, David Berry suggests that the digital humanities can benefit from incorporating the medium specificity that is often part of platform and critical code studies and that although these fields are currently fairly separate, they could be more closely aligned.³⁴

Along the same lines, Laine Nooney investigates the social and cultural construction of “gamer” in relation to the computer game industry of the 1980s, looking particularly at gendered notions and using Sierra On-Line and its products as an example. Her object of inquiry is clearly digitally inflected, although she is not primarily focusing on creating computer games or creating academic installations. Her work sits within media studies but relates to digital humanities, software studies, and gender studies. Jennie Olofsson looks at what happens with screens once they are discarded. What is the ontological status of screens? When do screens cease to be screens? How can we engage with and theorize electronic waste? Again, the study object is digitally inflected, and we are not primarily concerned with digital tools or expressions, although her work relates to artwork. Olofsson is a cultural anthropologist, and her work seems located somewhere between digital humanities and environmental humanities. The work of both these researchers has an activist element. In addition, Olofsson is interested in making an academic installation (enacting and problematizing the death of screens), while Nooney has expressed interest in using complex display infrastructure for critical readings of games. This shows that the step from one mode of engagement to another is not so large, and given the right opportunities, new types of work may emerge.

Humanities-based engagement with information technology as an object of analysis is obviously multifaceted and complex, but looking at the digital humanities in a broad sense, this mode of engagement seems quite prevalent. The digital does not have to be the main focus: the study objects can be phenomena, cultural artifacts, and processes that are digitally inflected in various ways. Initiatives with a significant investment in this mode often seem fairly discrete in the landscape of the digital humanities but are rarely recognized as digital humanities. Big digital humanities includes humanities-based critical work on the digital.

The Digital as an Expressive Medium

Higher education incorporates a number of modalities and expressions at any time, but broadly speaking, the humanities and many other areas are very text-centric, especially in such important areas as degree papers, scientific publications, and tenure portfolios. According to the website of the Stanford Humanities Center,

Humanities research often involves an individual professor researching in a library in order to write a book. The books that result from this study are part of an ongoing dialogue about the meaning and possibilities of human existence that reaches back to ancient times and looks forward to our common future.³⁵

While this is a traditional view of the humanities and the situation is changing, this statement remains largely true. Print publishing has been around for a long time and is part of institutional, academic, and sociological structures. The Stanford Humanities Center is a good example of such structures. Humanities centers typically expect fellows to work on individual book projects.

The academy faces increased pressure from a digitized and multimodal world and to some extent from artistic practice and research. Digital modalities are increasingly intertwined in scholarly processes, and the systematic efforts to create platforms for alternative scholarly work play an important role, as do efforts to create systems for accreditation (such as the Modern Language Association guidelines for evaluating work in the digital humanities and digital media).³⁶ All of these are still fairly marginal phenomena in the humanities, but a combination of bottom-up and top-down work is starting to yield substantial results. This development means not that the monograph or print will disappear but that a broader ecology of institutionally possible scholarly modalities will develop.

Indeed, such ecological thinking will make it easier to create both experimental modalities with or without a credentialing function and formats that unapologetically build on established modes of scholarly expression and on a solid understanding of the situational factors at play. The online journal *Digital Humanities Quarterly* has established itself as an important publishing venue for digital humanities scholarship without engaging a great deal with the first commitment listed on the website for the journal—“experimenting with publication formats and the rhetoric of digital authoring”—and without publish-

ing many (if any) examples of “experiments in interactive media” (listed as a possible publication type).³⁷ *DHQ* is an excellent journal with a stronger multimodal component (mostly images) than earlier, but is not experimental in this sense, and does not really need to be in my mind. Similarly, recent publishing initiatives such as *Luminos* (University of California Press) place the monograph, as traditionally conceived, within an open access digital distribution system without seeking to upend the format. *Scalar* (Alliance for Networking Visual Culture) is also usefully situated within an institutional structure, but is much more experimental in terms of narrative and multimodal capabilities without challenging existing forms of scholarly expression radically.

Scalar is a scholarly publishing platform, and such platforms allow users to produce content, incorporate and organize materials, enable interaction and create narratives. These narratives are constrained and enabled by the systems used to make and deliver them. Such platforms are often attempts at creating new templates for scholarly knowledge production. And since content delivery is an institutional, infrastructural, and cultural process, any system will also have to relate to standards, status, merit systems, longevity, market shares, and many other parameters. Delivery and publishing systems such as *Omeka*, *Drupal*, and *Scalar* manifest certain values and suggest specific modes of organization and ways of making arguments. This epistemic embedding is probably why these systems are rarely revolutionary in terms of structuring content or suggesting expressive modalities.

An important consequence of increased digitization and particularly of the web is dramatically increased access to and availability of different types of content and media as well as production methods and distribution channels. Some of this content analog-created, but much of it digitally born. Increasingly, but not necessarily, these expressions are media-rich, polytextual, and mixed. Jeffrey Schnapp and Michael Shanks discuss “fungibility”—the gathering of many types of content (moving image, text, music, 3-D design, database, graphical detail, virtual walk-through, and so forth) into a single environment—as the core of digital mediation.³⁸ Content can accordingly be infinitely manipulated and remobilized without loss.

A significant point, however, is that this fungibility is shaped by the tools used to produce that content, and the resultant expressions and environments are constrained in different ways. This is particularly obvious with different kinds of authoring tools. PowerPoint and similar presentation tools would be a very simple example of this lock-in effect in imposing a serial slide perspective on the world, certain templates, a specific type of aesthetics, a set range of

expressive modalities, and file-delivery mechanisms. Also, such tools structure the presentation situation through the materiality of the interface, including the reliance on one screen and one presenter, one-by-one delivery of slides, and the way the presenter gets or does not get notes on his or her own screen.³⁹

Manovich shows that another fairly generic tool for digital production, Photoshop, is heavily based on an analog logic. For example, he finds that all the seemingly digital filters have direct physical predecessors.⁴⁰ Just as with presentation software, a very clear connection exists to predigital processes and logic. Manovich also discusses how the introduction of layers in the software marked a significant change in how the tool is used and hence influences how much of digital visual imagery is engineered and produced.⁴¹ Manovich's study essentially explores how digital production tools shape work processes, how the underlying logic and surface materiality of production tools structure our expressiveness, and how such logics often have a clear analog lineage. A reader of Manovich's online book, published via Issuu, encounters reproduced pages, simulated page turning, and many other "paper" features.⁴²

While we can tweak platforms such as PowerPoint and Photoshop to break out of the templates and inscribed ways of using them, there is a basic logic that we cannot really escape. Similarly, the universal appeal of the web as a platform imposes a number of constraints and predispositions for much digitally enabled content. Academic authoring and commenting tools are no exceptions, and platforms such as Scalar and MediaCommons Press both enable and constrain us. The digital humanities needs to have an in-depth discussion of conceptual principles for designing tools and platforms, and this work is clearly relevant to all of the humanities.

Expressive Modalities

A range of alternative expressive modalities is available. Online video is an important genre, used, for example, by sociologist Simon Lindgren in a series of "Social Science in 60 Seconds" short clips and by media scholar Jonathan Sterne in "Footnotes to a Manifesto for Diminished Voices," which is a largely silent textual commentary on the neglect of studying and acknowledging voice (privileging text) in academic work.⁴³ History of ideas scholar Linn Holmberg made a "trailer" of her dissertation work on a "forgotten encyclopedia" (the Maurists' dictionary of arts, crafts, and sciences).⁴⁴ She also made a replica (in wood) of the monastery where much of this intellectual work took place, and while this was not part of her official doctoral work, it helped her in the

research process.⁴⁵ Another example of explorative doctoral work is provided by Nick Sousanis's work on education articulated through a comic book.⁴⁶ In all these examples, the mode of expression seems deliberately to carry considerable weight. What is being said is entangled with the medium used. There is also an awareness of stepping away from the traditional scholarly format, which is probably not surprising, given the privileging and "templating" of mostly textual modalities in the humanities.

The level of interaction and performativity suggested by most scholarly work seems to have a limit. True, some scholars present their work in a more expressive way than do others, and different scholars have different strategies for engaging with participants, but such presentations often operate within the established framework. This framework no doubt offers a great deal of expressive potential, but even small steps away from what we expect are unusual and at times worrying. For example, Micha Cárdenas starts her talks by asking participants to breathe together (as a synchronizing exercise). Similarly, Sterne sometimes asks audience members to read quotes aloud. I use our eleven-screen landscape for talking about HUMlab (or other topics) by walking from screen to screen instead of seating everyone and showing a slideshow. Again, this is a simple idea, but the difference can be substantial. For one thing, people standing close to the speaker interact with that speaker differently than when they are seated as a group. Also, having all the images visible at the same time rather than one at a time (seated slideware presentation) creates other narrative potential and retains the story in the space.

However, more artistic modalities are rarely employed for humanistic research unless a researcher-artist collaboration is taking place (often resulting in an exhibition). Indeed, it would be hard to imagine a humanistic scholarly presentation as raw and expressive as Kelly Dobson's "Blendie," where the viewer must speak with a blender in its own language to make it do its work, or as embodied and expressive as a dance performance.⁴⁷ The point here is not that we should necessarily dance our work but that we should think about boundaries and possibilities and step outside of our comfort zone. Doing so is not easy given the institutional, epistemic, and cultural embeddedness of knowledge production. One way of approaching this problem might be to introduce "academic installations," which would not claim to be artistic and would not be have templates related to specific platforms or spaces. Another possibility is to engage in critical discussion through the material manifestations (academic installations, digital projects, presentations) in a manner reminiscent to critique (or crit) sessions in art and design education.

Some disciplines in the humanities, including visual and media studies, have been affected more significantly than others by new expressive modalities. This engagement has typically occurred on the level of object of study rather than the production of expressive, creative media. Tara McPherson critiques this imbalance:

We have been slow to explore the potential of interactive, immersive, and multimedia expression for our own thinking and scholarship, even as we dabble with such forms in our teaching. With a few exceptions, we remain content to comment about technology and media, rather than to participate more actively in constructing knowledge in and through our objects of study.⁴⁸

This argument concerns not only the importance of carrying out both critical and expressive work but also the ways in which knowledge can be made through expressive media, which necessarily requires the integration of the critical and expressive aspects of humanistic scholarship. This integration or entanglement is an important part of big digital humanities.

Expressive Conditioning in Different Academic Contexts

As McPherson also indicates, it is easier to find experimentation with digital media in undergraduate education than in research or doctoral-level education. Graduate education tends to be much more traditional than undergraduate education for several reasons. There is more epistemic and social control at this level as Ph.D. education essentially produces new peers. There is also typically less focus on employability and digital literacy. Furthermore, graduate education is relatively privileged compared to most other types of education.

In faculty research and education, increased accountability and the expansion of so-called quality-based systems make experimenting more difficult. In Sweden, university education is now evaluated mainly on degree papers or projects, and the right to give an educational program can be revoked based on these evaluations.⁴⁹ An economic incentive also exists to score highly on these evaluations. Such a system would not seem to encourage risk or an expansion of the expressive repertoire.

As with the evaluation of educational programs, scholarly work tends to rely on assessments of quality. The reward structures of academe have a

significant impact on how scholars choose to publish and express themselves. And again, systems such as the United Kingdom Research Assessment Framework are not likely to encourage untraditional forms of scholarly expression.⁵⁰ Although Andrew Prescott is right when he points to the obsession with U.S.-style tenure-track assessment in the digital humanities,⁵¹ tenure-track systems are a relevant reward structure to look at in this context. Such systems are common in North America and are based on an initial time-limited employment as assistant professor that can be made into a permanent position. Tenure-track scholars often have a sense that digital modes of representation may place them at a relative disadvantage and in fact may receive explicit advice to that end from senior faculty and administrators. These reward structures may be changing, but it is at a very slow pace, and there is no simple path forward, although work such as “New Criteria for New Media” is part of a lively and important discussion.⁵²

The reward structures, however, do not always stop doctoral researchers from expressing themselves alternatively, but such efforts are often seen as “extra” undertakings that do not replace the traditional work needed to qualify academically. This pressure sometimes induces researchers to secure very strong academic merits as well as engage in alternative practices and modes of production. Some of the discourse surrounding this issue (often produced by senior, well-established, and “safe” scholars) seems to imply that every digital humanist would have an interest in alternative, nontraditional production, but such is obviously not the case. Monographs and in some disciplines peer-reviewed articles are not just tied to a traditional reward system but may represent a rightful dream of academic expression and a distinct scholarly identity for early-career researchers. This sentiment may be difficult to disentangle from the fact that publishing presses and venues are invested with respect and value. McPherson points to the importance of working with academic presses to form new kinds of partnerships and platforms for digitally rich publication.⁵³

A range of possible digitally inflected modes of expression exists, and they are situated within different disciplinary, institutional, and personal contexts and consequently come with different implications and degrees of risk taking. A humanities dissertation presented as a floor screen installation would naturally be much more challenging to the established system than using a personal research blog or a research-oriented Twitter feed as a supportive device. The situation is slowly changing, however, and it now seems easier to do an academic doctoral dissertation as some kind of multimodal online presen-

tation than would previously have been the case. The emergence of guidelines for digital content probably plays an important factor here, as does a more general acceptance of the web as a platform for academic content.

Even more is at stake in the artistic realm. Can a history or communication doctoral project be manifested through something that looks like an artistic installation? While most history and communication departments likely would find such a proposal challenging, this distinction is breaking down somewhat in at least some contexts. For example, in Sweden, the introduction of practice-based doctoral dissertations has changed the landscape, and on the Umeå Arts Campus and elsewhere, both kinds of work happen at the same time, blurring lines. Sousanis's comics work is a recent example of alternative modalities in doctoral work.⁵⁴ At the same time, we are essentially concerned with two different worlds and territories. Scholarly works can draw on expressive modalities taken from art and can have artistic components, but they will usually not be art pieces.

Activism as a stance and practice is a related perspective that can blur the distinctions among art, artistic practice, and the humanities. Sharon Daniel's Vectors project, *Public Secrets*, which addresses the prison system in Central California, is an example of activism in an academic setting, arguably within the digital humanities.⁵⁵ The project features a strong sense of intervention that resonates with the idea of "active" humanities. Daniel was admitted to the Central California Women's Facility as a legal advocate, and her recorded interviews with the women there play a very important part in the Vectors piece. Work such as *Public Secrets* brings together an artistic and activist installation and academic expression in a single frame that serves both as a cultural critique and as an activist call for change.

Connecting "tinkering, playing, and visualization" and the academic criticism and cultural critique of her own kind of work, Rita Raley discusses the aesthetic strategies of artists and activists as using hybrid forms of academic criticism.⁵⁶ According to Drucker, "making things, as a thinking practice, is not only formative but transformative," and she includes aesthetic provocation as part of the practice of speculative computing as opposed to traditional digital humanities.⁵⁷ Much digital humanities work seems a bit tame in this regard, and there is a great deal to learn from such practices. The influx of digital humanists from areas such as queer studies and ethnicity studies will likely make the digital humanities more active in this sense. An example is the work by Roopika Risam and Adeline Koh (and many others) to rewrite Wikipedia from a postcolonial and gender perspective:

Thus, Postcolonial Digital Humanists have an obligation to engage with Wikipedia editing. Postcolonial studies has prided itself on challenging paradigms that perpetuate social inequality in terms of “who” and “what” is worthy of representation. Through Wikipedia editing, Postcolonial Digital Humanists have the opportunity to intervene in what postcolonial studies critics have termed colonial paradigms of knowledge production and imperialist hierarchies of information.⁵⁸

The digital humanities could have a great deal to contribute in terms of engaging with the digital as an expressive, scholarly, artistic, provocative, and activist medium. As the conditions and platforms for scholarly work are shifting, there is also a growing emphasis on the role of the medium and the material manifestation in humanistic knowledge production. Critical attention is given to issues such as search engine algorithms, our dependency on enterprise-level platforms for online learning, and gaps and biases in library classification systems that hinder access, data ownership, and open access as a way of enabling public scholarship.⁵⁹ A key challenge is to connect these and other critical perspectives to our own knowledge production and expressive practice. Humanistic creative engagement with existing and new expressive technologies must be critically informed. Furthermore, as intellectual questions, scholarly materials, expressive modalities, and work processes increasingly come together in digitally inflected platforms or installations, it is not really possible to separate expression, communication, or presentation from interpretation, analysis, and enactment.

Premise: The Digital Humanities as a Meeting Place

To engage with the digital across several modes of engagement, the digital humanities requires an institutional position, a breadth of epistemic traditions, methodological competence, and material resources. The second premise of big digital humanities suggests that seeing the field as a meeting place can help meet these requirements. The digital humanities constitutes a curatorial and catalytic enterprise involved in shaping intellectual agendas, infrastructure, and intersectional activity.

Given strong and flexible connections to all the humanities disciplines as well as to other areas, the digital humanities can be seen as a relatively discipline-neutral field. The digital serves as a kind of material and boundary object, a concept that is also important to the idea of digital humanities as

a meeting place and trading zone. Matt Ratto and Robert Ree argue that the digital media is not a sector, and a similar argument can be made that “the digital” is not a discipline.⁶⁰ The digital cuts across disciplines and modes of engagement, and seeing the digital humanities as a contact zone and meeting place can enable us to take seriously this quality of the digital.

The idea of the digital humanities as an in-between operation is not new. Indeed, much of the struggle of humanities computing and digital humanities has been about managing this liminal position, which has previously made it difficult to employ faculty, gain institutional credibility, and achieve a respectable level of scholarly status. One among many examples of this kind of discussion is a 1999 seminar, *Is Humanities Computing an Academic Discipline?*, organized by the Institute of Advanced Technology in the Humanities at the University of Virginia.⁶¹ The digital humanities has often been more practice-based than theoretically oriented, at times leading to a sense of difference or even stigmatization. Many humanities computing centers have been closed or restructured over the years,⁶² a common fate among academic enterprises seen as service units. At least from a historical point of view, therefore, association with humanities computing or a digital humanities center brings a fair degree of risk.

At the same time, this position has allowed the digital humanities to work outside established structures and to gain leverage from its difference and from its status as not competing directly (or as obviously) with other departments and disciplines. An entity that exists somewhat outside of traditional structures can more easily take on a catalyst and intermediary role and work with a range of disciplines. This is not to suggest that the traditional digital humanities has been positioned between in all respects. In particular, the intersectional position has been restricted to certain types of areas (notably methodology development) and has often been embedded in a service framework (of one kind or another). One key question, in any case, is whether the digital humanities prefers a liminal position, or whether there is a push toward a more independent role and a more disciplinary, departmental structure.

Meeting Places, Trading Zones, and Boundary Objects

On a general level, higher education would benefit from more strongly supporting what happens between disciplines. While the university can be seen as a meeting of minds, ideas, and perspectives in the context of knowledge

production, most universities and other educational institutions are highly structured organizations characterized by specialization, professionalization, credentialing and accountability. Disciplines have a long history, and the establishment of new disciplines is a very rare occurrence. Many of our current disciplines were established in the latter part of the nineteenth century and beginning of the twentieth century. New centers and various interdisciplinary formations emerge more frequently but normally exist somewhat outside the main structures of a university.

What does liminal, in-between work look like? It can certainly be carried out in distributed ways or without access to costly local infrastructure, but advantages can accrue when different types of meeting places help facilitate this kind of work. This is particularly true if it is seen as important to bring together a varying range of epistemic traditions and modes of engagement. In the humanities, such platforms include libraries or more commonly humanities centers or advanced institutes. Other examples include campus-wide or cross-campus networks, research groups, seminar series, collaborative writing platforms, and lab environments.

Many intersectional platforms in the academy are exclusive in that they do not necessarily include students of all levels or people from other schools. Such platforms can seem open but in practice typically impose restrictions through the way people are invited and greeted and through intimidating settings. The argument is not that higher education does not need to be specialized but that few open and accessible places exist for such meetings across areas and disciplines that are not overly predetermined in terms of content, form, and ideational direction. The digital humanities has a role here.

Peter Galison's work has been important to our understanding of how different epistemic traditions can meet and work productively together. Primarily analyzing the collaboration between physicists of different paradigms, he has developed the concept of trading zones as a way of understanding how scientists can communicate and collaborate even if they come from different paradigms in the Kuhnian sense and even if there is incommensurability between experimentalists and theorists.⁶³ While digital humanities as a field may lack such incommensurability, a parallel certainly exists in terms of the need to support work across epistemic traditions that in some ways are quite distinct. Another connection is the need to connect local practices with what Galison calls a global language of science. In the case of digital humanities, the global language would presumably be international-level discourse about the field and the way it is conceptualized and written.

The concept of trading zones applies more broadly to interdisciplinary work and demonstrates the possibility of maintaining disciplinary depth and focus (expertise) as well as meaningfully engaging in intersectional work. Galison describes the “thinness of interpretation” in trade rather than the “thickness of consensus.”⁶⁴ This is another point at which we may want to problematize the discourse around niceness in the digital humanities. The goal may not be to reach consensus, and while being nice is naturally fundamental to any field, talking about being nice can sometimes be a way of hiding, of avoiding in-group critiques, and of failing to engage in a real way with groups outside one’s own tradition and group. Trading zones are about brokering cultural exchange, and while they operate on an institutional level, they can never succeed without cultural performance and individual enactments. Indeed, individual enactment and engagement are critical to well-functioning meeting places.

On a critical note, the concept of trading zones comes from work on science (not the humanities), is obviously based on trading as a structuring metaphor (which may be questioned and seen in neoliberal or postcolonial terms), and consequently has a functional focus. Part of the beauty of “free” academic work is that it is not fully transactional but emergent and unpredictable. Galison shows, however, that it is possible to maintain disciplinary depth and focus while meaningfully engaging in intersectional work.

The digital humanities can be seen as a trading zone, contact zone, and meeting place, and this approach is compatible with digital humanities as a humanities project. I see trading zones and meeting places as partially overlapping concepts, where the latter is more general and less instrumental. A related and useful notion is that of contact zones, as developed by Mary Louise Pratt. She emphasized the often asymmetrical relations of power in “social spaces where cultures meet, clash, and grapple with each other.”⁶⁵ This sensitivity to power relations is highly relevant to any liminal operation, especially one that claims to be open and inclusive, as big digital humanities does.

Another relevant concept is that of temporary autonomous zones, which describes the strategy of creating temporary spaces on the boundary lines of established region that elude formal structures of control.⁶⁶ The open and dynamic sensibility associated with temporary autonomous zones contrasts with the instrumentalism associated with trading zones. Arguably, big digital humanities needs to incorporate elements from both. The tension between liminal experiences and the establishment of permanent structures is a well-known issue in work on liminality.⁶⁷ For example, an important ques-

tion concerns how a liminal operation learns over time if there are few structural properties and a constant influx of new people. Big digital humanities needs to be open enough to allow for unexpected outcomes and unforeseen pursuits. It also needs to be structured and have an agenda to prevent it from becoming a fairly bland place without sharpness or memory. There is probably no point in trying to institutionalize liminal spaces or operations across the board, because their relative unstructuredness is an important property. However, higher education generally needs to support more such initiatives and be sensitive to the usefulness of unstructured in-between spaces such as coffee shops and even hallways.

In an illuminating study of multidisciplinary health care as carried out in an Australian teaching hospital, Rick Iedema and his collaborators analyzed how a clinical team used the corridor as a liminal space using video-based ethnography. Corridors are important because they allow unstructured and unplanned communication, they are places for informal teaching, and they escape the hierarchies built into many other medical spaces. Because corridors have a marginal status in the organization of care, they become “central to the dynamic unfolding and heedful managing of complex and highly patient-centred care processes.”⁶⁸ But what would happen if the liminal space became fully institutionalized and structured? Again, the power of open meeting places and trading zones such as big digital humanities lies both in structuring exchange and allowing the unexpected, unplanned, and controversial. In addition, intersectional meeting places are not homogeneous, and it is quite useful if they have a hallway outside them or a coffee shop nearby.

No institutional structure exists outside its institutional context, of course, and the role of intersectional operations is not stable over time. The work of Harry Collins, Robert Evans, and Mike Gorman is useful in suggesting a model based on two dimensions: the extent to which power is used to enforce trade, and the extent to which trade leads to a homogeneous new culture. Furthermore, they propose an evolution of trading zones, where one starting point can be when a university encourages faculty from different disciplines to collaborate to formulate a new initiative or proposal.⁶⁹ In the case of digital humanities, a fair amount of such encouragement currently occurs. Under this reading, such situations contain some degree of coercion, which would presumably also be the case when a funding agency launches a new program for an area such as the digital humanities. If scholars decide to work together, the trading zone would become more collaborative and voluntary, and Collins, Evans, and Gorman propose that this may lead to a fractioned trading zone

with shared boundary objects or interactional expertise emerging from deeper interest in others' work.⁷⁰ Further development according to this model might include the trading zone and cultures becoming more homogeneous, leading to an interlanguage trading zone that might ultimately turn into a new disciplinary formation and the loss of the actual trading zone.

To avoid becoming totally generic, trading zones and meeting places, require something that attracts people to gather there and interact around ideas and projects. Indeed, this has to be the starting point, and if there is no strong motivation and no dedicated scholars and students, there is little sense in establishing meeting places. However, building such operations takes time, and the digital allows for a range of interaction points, meaning that many different sets of shared interests come together under the umbrella of digital humanities. One way of describing the digital and the shared interests is in terms of boundary objects.

Susan Leigh Star and James R. Griesemer develop the idea of boundary objects primarily based on studies of the historical development of natural history research museums.⁷¹ In this world, boundary objects are said to be created when different parties (mainly researchers, sponsors, and amateurs) work together to produce representations of nature. There is a shared common goal and shared objects such as field notes, maps, specimens, and museums.

Their boundary nature is reflected by the fact that they are simultaneously concrete and abstract, specific and abstract, specific and general, conventionalized and customized. They are often internally heterogeneous.⁷²

The digital has a boundary quality in that it brings together a number of actors with different perspectives and epistemic positions. This certainly applies to the digital in relation to digital humanities. According to Star and Griesemer, boundary objects are "both adaptable to different viewpoints and robust enough to maintain identity across them."⁷³ The authors also stress the heterogeneity of boundary objects, which would seem congruent with the multiple modes of engagement and different perspectives associated with the digital humanities.

Star and Griesemer's framework emphasizes making, and representations created together (for example, in a museum) are thought to contain and resolve the different commitments and views of the actors involved. This

relates to the discussion of making in the digital humanities and is indeed an argument for including making or building as part of an epistemic basis. Multiple perspectives and viewpoints can be contrasted, negotiated, and perhaps resolved in processes focused on shared making and creating. Ratto makes a similar point in relation to “critical making,” where critical thinking and physical making are connected.⁷⁴ Shared making is seen as supporting the formation of a collective frame, which enables epistemic differences to be demonstrated as well as possibly resolved. This model contrasts with the argument for building in the digital humanities made by Stephen Ramsay and Geoffrey Rockwell, who attempt to establish a materialist epistemology.⁷⁵ Ramsay and Rockwell focus more on the resultant artifacts and individual production than does Ratto, who stresses the collective process. Ramsay and Rockwell also suggest a more distinct shift from traditional scholarly modalities to “building,” whereas Ratto stresses the importance of closely relating the two:

However, the ability of the participants to engage with the social theories presented to them and to develop and share new understandings was intimately related to the joint conceptual and materially productive work.⁷⁶

The question of making, particularly when exemplified through coding, also illustrates the digital humanities’ tendency to become stuck in epistemic conflicts, which can be productive to a certain degree but rarely resolve anything. Many of the current tensions in digital humanities seem to be tied to establishing the territory of the field. One possible solution is not to claim institutional territory as a department or discipline does but rather to establish the field as a meeting place.

Developing Digital Humanities as a Meeting Place

Digital humanities as a meeting place should have its own integrity and appropriate organizational status, but the idea would be to work with the rest of the humanities and what is outside. This may not be a new proposal, but this meeting place must support many modes of engagement with the digital and must both engage in tool building and connect with the future of the humanities. This key premise of big digital humanities offers a way to engage with the digital broadly and richly in relation to humanities-based questions

and issues—essentially the human condition. Such a meeting place should have technological engagement and an acceptance for different epistemic traditions.

The sentiment and engagement associated with the digital humanities as a meeting place are central to the field as a whole, but every institution does not necessarily have to do everything. A large digital humanities center, a distributed network, a working group or a research group within a traditional discipline (whether English, media studies, or something else) can all fit into this model. While this book emphasizes physical digital meeting places, most of the reasoning applies to the whole range of possible enterprises. In fact, commonalities are accentuated by seeing the digital humanities as a liminal operation, including the processes and practices required to make and sustain meeting places. Among other things, keeping such operations relevant, stable, and vibrant requires good curatorship.

The digital humanities as a contact zone is congruent with a view of the interrelation between the humanities and the digital as rich and multifaceted. If the digital humanities is about engaging with technology as tool, object of inquiry, and medium of expression, and if we regard these modes as intrinsically interconnected, we need to see the field as a place where these perspectives and epistemic traditions come together. In terms of structural integrity and sustainability, it may be more advantageous to construe the digital humanities as a meeting place, innovation hub, and trading zone than as a distinct discipline. This would clearly give the field reach across the humanities.

Viewing the field as a meeting place emphasizes certain qualities that are present in almost all varieties of the digital humanities, such as the relative openness to working with other disciplines and areas and the facilitating or intermediary function. However, digital humanities as a meeting place and trading zone presumes profound openness to a number of different epistemic traditions and a facilitating role that is not strictly instrumental or service minded but multifaceted and dynamic.

There are several rationales for framing the field as a contact zone. First, a multiple-mode engagement with the digital across the humanities benefits from or may even require the digital humanities to be a meeting place. This is also a way of expanding the territory and reach of the field considerably without raising tents. A trading zone implies respecting (but not necessarily adopting) other epistemic traditions and a shared interest in boundary objects. Furthermore, considerable potential gains across the territory may not currently be fully exploited, such as an increased use of digital research tools

and rigorous data management in media studies or a stronger theoretical anchoring of some more tool-based work. Opening up the digital humanities in this way would ease the process of incorporating the various traditions and newcomers. In many cases, this engagement will also extend outside the humanities to include, for example, science, engineering, and design.

Second, the coming together of disciplines and competencies is necessary to tackle the scholarly, technical, and structural questions associated with the digital humanities. What does it mean to be human in a digital age? Can media be thought of in terms of architectural representation? How do we build robust metadata schemes for cultural heritage materials and humanities research? What kind of interpretative power can a temporal-geographical system with faceted browsing access to cultural heritage possibly give? What is the future of academic publishing? How can students, faculty, and the public benefit from different types of multimodal representation to depict and explore key issues in, for example, history, philosophy, or comparative literature? How can we examine the interrelations among media, place, and technology? Most of these issues are complex and require collaboration across disciplines and scholarly as well as technological competence. Collaboration in this context requires more than simply working together on projects; it requires sharing an intellectual and material environment.

The digital humanities as a meeting place—reaching across the humanities and outside—can also be seen as a powerful way of channeling dispersed staff, technology, and faculty resources, which can be pooled as part of a humanities-wide initiative. Perhaps more important, a large enough reach and mass facilitate arguments in favor of infrastructure in terms of space, people, and technology. This can probably not be done in all institutional contexts as a consequence of resources, leverage, and priorities, but infrastructure can also be small and cheap. Relatively few digital humanities (and humanities) environments have strong spaces and innovative technology setups. If we see knowledge production as spatially and materially situated,⁷⁷ the digital humanities as a humanities project offers an opportunity to acquire and design space (physical and digital). This idea speaks to many humanities scholars and students and can be instrumental in making the contact zone come to life.⁷⁸ Such a development holds the potential for synergy and unexpected connections. Also, if we believe that situated and embodied practice is important, humanities laboratories provide one place for such work.⁷⁹

Finally, universities and institutions of higher education often lack intersectional meeting places and contact zones.⁸⁰ Many institutions of higher

education have failed to fill this niche, but opportunity exists and need is increasing. The digital has the intersectional power required, while the humanities possesses the awareness and potential legitimacy to be that place. So rather than disregarding the digital, interpreting it as purely technical, or seeing it as an uncomfortable denomination, it can be used as a means of making the humanities a catalyst for interchange, development and envisioning the future of the academy.⁸¹

Interlude 5: The Challenges of Living in-Between

Institutional meeting places and platforms are often presented or proposed through narratives filled with bustling activities, creative energy, and visionary projects. Rarely do we get to see or experience empty lab spaces, failed projects, institutional frustration, or collaborative online platforms devoid of participation. A good example is Neil Freistat's spatial walkthrough of the premises of the Maryland Institute for Technology in the Humanities or my description of HUMlab in Interlude 7.⁸²

This pattern is not surprising. First, it is rather natural to show and narrate what is most interesting and successful. This is normally what is expected or what representatives of such operations believe is expected of them. Institutional hardships and problems are rarely the focus. Second, we tend to remember what works well and what is exciting. This tendency may be more pronounced with intersectional platforms, which usually have more variety in terms of intensity and engagement over time. The high points stick to institutional memory and as work on organizational memory shows, may also be part of what we are expected and institutionalized to remember.⁸³ Third, in contrast to many other institutional formations, such platforms often have a pronounced interest in envisioning their own future. Such visions easily become intertwined with the current implementation, and they become difficult to untangle.

So for a moment, let's consider the other side of the digital humanities as a meeting place. Some aspects of such meeting places are not necessarily so visible, apparent, or immediate.

Meeting places normally depend on other people for much of their core operation. A coffee shop or a library would not function without patrons, and most humanities centers without resident fellows would be as uninteresting as online collaboratories without participation. Any host of an event at which attendance has not been mandatory will probably know the fear that no one

will show up. Hosting comes with responsibility, and orchestrating meetings and intersectional activities on a large scale takes time and effort.

I once presented HUMlab to the leadership of a Swedish innovation agency, Vinnova, and was surprised when the first comments were not so much about the actual setup or core ideas but rather about how we had managed to create what to them seemed an active and sustainable meeting place or innovation hub. They knew that creating such intersectional operations can be quite difficult and thought that our experiences might transfer to other domains. On the one hand, being in-between institutionally can be quite advantageous in terms of visibility, the ability to present visions and ongoing work, and channeling energy. On the other hand, it takes a great deal of work to make a meeting place work in an institutional context where everyone is busy and where the traditional institutional structures are very strong.

Bringing people together is difficult and requires an engaged and skillful team as well as the ability to find boundary objects and common interests. Digital humanities as a meeting place would seem to come with expectations of external engagement and bringing people together. Since big digital humanities largely exists outside disciplinary structures, much of this engagement must be built on scholarly and methodological interest in the digital (broadly speaking) and a willingness to participate in something outside the discipline or the department. This interest and buy-in will vary among projects, activities, and groups, which means that the meeting place itself becomes quite dynamic and undetermined. Having this kind of flux is quite important to the core operation and ideally allows for overlap and connection points among simultaneous activities. Such overlap can be random and emergent as well as orchestrated. Activities in adjoining spaces are more likely to influence each other than the same activities in different buildings. Can institutional memory grow in an operation characterized by flux and unpredictability? Major benefits no doubt accrue from a broad, open, and emergent engagement rather than from a more closed, traditional institutional model.

Persistence is critical for implementing big digital humanities and probably for most other types of institutional endeavors as well. For the digital humanities as a meeting place, there will be many occasions when very promising conditions for fruitful exchange have been created but the expected audience and spark do not materialize. There have been many times when HUMlab had first-rate international scholars visit, but no one participated from the humanities disciplines that would have gained the most from such an engagement. I used to think and say that activities we host should be so exciting and

important that people would be sorry if they did not attend. I think this may still be a worthwhile approach, but it is of course better to have people come to an event than for them to be sorry they missed it.

Developing operations outside the established structures of higher education can be very rewarding but typically comes with challenges. As Julie Klein emphasizes, fit is a key problem for interdisciplinary efforts.⁸⁴ If the digital humanities could easily be placed within existing institutional structures, there would probably be no need for extended debates about the place and role of the field. But would any field be in such a situation? The digital humanities would likely either be absorbed into a discipline or be evenly distributed across disciplines with a good enough fit to avoid upsetting prevailing ways of organizing knowledge and work. But if a poor fit exists between the intersectional operation and institutional structures, we should try to create new structures or change existing ones. Such structures push back against established formations, and even if big digital humanities does not necessarily strongly challenge established departments and disciplines, a competition essentially takes place for funding, recognition, and ownership of certain fields of knowledge. As a result, new initiatives almost certainly will meet resistance, even if questions of digital tools, literacy, and reward systems would seem highly relevant.

Resistance is not necessarily an unnatural or counterproductive thing but can be expected and logical. It would be strange if the tradition of organizing knowledge and work in the humanities did not resist change to a certain degree. But a readiness to change must also exist. In 1998, when HUMlab was still mostly a sketch, a very important board meeting of the Faculty of Arts at Umeå University took place. HUMlab had received a major external grant for equipment from the Kempe Foundation, and board members discussed whether to allocate funding for running costs for this new enterprise. The vote ended in a tie, meaning that the chair of the faculty board had the decisive vote: the running cost funding was approved. I do not see the board's initial resistance as surprising or wrong. It is a matter of the distribution of resources and long-term financial and strategic commitments. HUMlab was quite likely to be a long-term undertaking, and lab environments are not necessarily easily dismantled. But this example also demonstrates the fragility of the birth process for such institutions as well as the critical role that external funding agencies can play. Without the external grant, HUMlab would likely not exist. Such foundations are often willing to take risks in a way that universities and mainstream funding agencies are not.

Persistence is a critical quality, as is working with faculty and others to show that the platform is well worth the investment. Intersectional operations at times have strong support from university leaders because they encourage work outside the traditional structures of the university. But even with good support, institutional fights and hardships are likely to arise along the way, but with a strong idea and institutional willpower, most obstacles can be overcome. It is also advisable not to stress an outsider sentiment too much and to frame the digital humanities as always opposing established structures. Big digital humanities emphasizes working with the departments and disciplines, and providing much more scalability and long-term growth.

However, existing outside those structures and having the power to do things that others also has benefits. Big digital humanities work requires a good ability to tweak and push existing structures. Such work will meet resistance, but it is not necessarily insurmountable. Resistance may come from faculty and leaders as well as from the administrative level. Administrative templates are typically very fitted, and institutionally difference can significantly challenge the system. While HUMlab has always had a close and productive collaboration with university administrators, opinions have certainly diverged at some points. When HUMlab had received the grant from the Kempe Foundation in 1998, one administrator argued that the funding should be transferred and managed by this unit rather than being managed by a humanities lab. Fortunately, the cowboy in charge of HUMlab at that point just told off the administrator.

Despite the potential challenges of living outside traditional departments and disciplines, a very strong case can be made for seeing the digital humanities as a meeting place. An alternative way of putting it is to say that a strong case can be made partly because of these very difficulties: these challenges would not exist if we were concerned with something already thought out, institutionally anchored, and safe.

Premise: The Digital Humanities as a Humanities Project

The third premise of big digital humanities is intimately related to the role of the digital humanities as a meeting place. It describes the digital humanities as a humanities project and place to configure, develop, and channel the humanities. This is an important part of big digital humanities: the humanities needs an intersectional place or laboratory for thinking about, rethinking, and renewing itself. A potential and a responsibility exist here that can-

not be achieved from the position of a traditional department or discipline. This potential draws on the tension between the humanities and the digital humanities.

In some ways, the digital humanities appears to be everything that the humanities has resisted: a seemingly technocentric, neoliberal, noncritical, practical, collaborative, “nice,” and outwardly successful enterprise modeled on science and engineering and overtly invested in presentation, outreach, and visibility. It could be argued that the digital humanities has occupied a place that could have been engineered and manifested by the traditional humanities had they taken the opportunity. The digital humanities thus becomes a missed opportunity as well as an image of what the humanities could become if they ever succumbed to outside pressures. Somewhat similarly, the traditional humanities sometimes seems to serve as a reminder of what the digital humanities does not want to be: resistant to innovation, disciplinary, focused on individual work, invested in traditional forms of knowledge production, technophobic, unwilling to acknowledge nonacademic forms of expertise, hierarchical, and slow to change. Of course, many digital humanists come from or are still affiliated with humanities disciplines, so a multilayered and historically laden connection exists. And many (if not most) of the projects in the field have been carried out with the humanities disciplines.

There can be no doubt, however, that the place of the digital humanities will always be understood in relation to the humanities at large. And increasingly, the rest of the humanities will have to think about how their disciplines and questions relate to the digital, broadly speaking. Indeed, the somewhat dogmatic mapping of positions in the preceding paragraph can be turned around. Much of what the humanities may be skeptical about in the digital humanities are also things that the disciplines need to tackle. For example, engaging with alternative models of knowledge production, adopting a more active relation to the world outside the university, learning from science and engineering models, and being demonstratively and passionately proud of your work. And the digital humanities would be well served by drawing on the disciplines’ traditions and intellectual history, their intellectual curiosity and sense of accountability, and the sheer range and volume of work, ideas, and networks available in the whole of the humanities.

In this way, the field can be a site of engagement in relation to the current status and future of the humanities, as it already is to some extent. This is less about individual disciplines or individual modes of engagement and more about seeing the digital humanities as a humanities project. With the

4humanities initiative, Alan Liu and his collaborators link the digital humanities to the cause of the humanities. In addition, the #transformDH initiative discussed in chapter 2 is not just about changing the digital humanities but about creating a new kind of humanities. Many white papers and descriptions of the digital humanities feature rhetoric about developing and transforming the humanities, arguing that the reach and visionary capacity of the digital humanities must be part of the field's texture.

Seeing the digital humanities as a humanities project can be problematic in some respects. From an internal point of view, not all members of the field would agree that serving as a humanities project is the job of the digital humanities. Those outside the field might ask what gives the digital humanities the right to represent and envision the humanities. This question is linked to the overall conception of the field. The benefits of big digital humanities are many, and the role of the field described here follows from this model.

This does not mean that big digital humanities should be infused with vague visionary speak or that everyone in the field must be engaged with the future of the academy on a daily basis; rather, the realization that the digital humanities is essentially a humanities project means that a connection exists with all of the humanities as well as with the outside and that the field is a place for engaging with the future of the humanities, pushing structural change, and facilitating intersectional discussion. Such a position necessarily resonates with technological, methodological, and disciplinary work carried out in the area.

The notion of the digital humanities as a humanities project draws on the reach of the humanities and the digital. The digital humanities operates across the humanities (or at least has the potential to do so). Many possible interaction points exist between the various humanities disciplines and the digital humanities. Information technology provides powerful tools for the humanities, and the digital constitutes an integral part of our culture. These actualities affect all the humanities disciplines on a fundamental level. Traditionally, digital humanities centers and initiatives have also been institutionalized differently than regular departments, helping to explain this in-between position.

Furthermore, the digital humanities represents the humanities in different contexts, in part because of the current interest in the digital humanities but more fundamentally because the intermediate position of the digital humanities makes the field a useful one-stop manifestation of the humanities. External funding agencies and institutions can sometimes perceive the

digital humanities as a part of the humanities that is easier to understand or target. The discourse on humanities research infrastructure exemplifies this process.⁸⁵ Funding agencies, such as the U.S. Office of Digital Humanities at the National Endowment of the Humanities, can serve an important function in reaching across the humanities and speaking both to the broader funding agency ecology and to the humanities at large. Representing the humanities also means engaging with academic partners outside the humanities proper. The digital humanities can help create connections with science, medicine, engineering, and the arts through intellectually and technologically driven collaboration building on respect and mutual interest.

A strong historical and contemporary link exists between visionary discourse and technology,⁸⁶ and the digital humanities clearly has a strong investment in technology, technological infrastructure, and the digital more generally. For example, visions that draw directly on existing or future technological innovation are common in the discourse of research infrastructure and traditional humanities computing.⁸⁷ Such discursive potential can be recruited to imagine the future of the humanities, refined digital publication systems, humanities-based infrastructure, or new research projects.

There seems to be a sense that doing digital humanities work requires pushing against established traditions and structures. For example, a one-week online and print book project, *Hacking the Academy*, declared, “Today serious scholars are asking whether the institutions of the academy as they have existed for decades, even centuries, aren’t becoming obsolete. Every aspect of scholarly infrastructure is being questioned, and even more importantly, being hacked.”⁸⁸ While it would not seem that scholarly infrastructure is questioned as profoundly as this citation suggests, the challenging potential of the digital humanities is important. This is probably one of the principal reasons why the field attracts people interested in thinking about and reconfiguring the humanities. The tension between the digital humanities and the academic establishment is multifaceted and involves institutional hurdles to doing interdisciplinary and collaborative work, a need for space and technological infrastructure, tenure systems not adapted to digital production and publications, and the need for nonfaculty experts and corresponding career paths. Based on these and other factors, a strong sense exists that the university and the humanities need to change to accommodate this type of work, and all of these phenomena feed into a vision of a transformed humanities.

On a more general level, a strong visionary and transformative sentiment goes beyond these intermediate-level issues. This is where we find intense,

sweeping statements, as when David Parry proclaims, “I don’t want a digital facelift for the humanities, I want the digital to completely change what it means to be a humanities scholar.”⁸⁹ This discourse seems grounded in the issues discussed previously (coming from the practical work of the field) as well as in discontent with the current situation for the humanities, the academe, and to some extent society at large.

This sentiment arises from a strong sense that the humanities is in a precarious situation in terms of funding and recognition and that higher education as a whole is facing a series of major challenges.⁹⁰ The current financially dire times in countries such as the United States and United Kingdom are part of this scenario, but according to many observers, higher education is also threatened by a lack of flexibility, adaptation of corporate culture, and an increased need to justify the humanities and arts.⁹¹ The recurring discourse regarding the crises of the humanities is not new but remains current.⁹² In this light, we see frustration and discontent among both junior and senior faculty. Early-career faculty and graduate students are concerned about the lack of possibilities for the future and the humanities’ apparent inward sentiment and structural resistance to new ideas.

A strong connection exists between the digital humanities and the humanities, and it seems reasonable that big digital humanities should have both a responsibility and willingness to engage with the humanities and the academy in terms of tackling substantive challenges and problems, channeling transformative sentiment, attracting disciplinary interest, and imagining a scholarly, technological, and societal future. This is a job for a broadly conceived digital humanities and cannot easily be carried out from a single disciplinary perspective.

Intellectual Middleware

We need digital humanities to be big for many reasons. One issue in particular that requires largeness is the coming together of research questions, data/materials, and material manifestations.

On one level, this would seem to be what the field is about, but in actuality, creating such deep connections presents a major challenge. Much of the work in the digital humanities has focused on the data/material layer and to some degree on material manifestations. In light of the field’s history, the reluctance to step into the intellectual territory of the disciplines seems understandable, but this reluctance constrains the methodological and technologi-

cal work carried out. In this case, stepping in means being involved in shaping the intellectual endeavor, which is more a question of curation than service. And there has been a lack of a developed material aesthetics in the digital humanities on a par with the best work available. For example, interaction designers and digital production experts are rarely involved in the process, meaning that practices such as prototyping and user testing are underutilized. Many projects were produced for a very limited group of people, resulting in little need to tailor interfaces to a large constituency. Also, the work of the digital humanities has focused more on the back end than the front end. This propensity is not just a matter of technology or design but is also part of the field's epistemic tradition.

Scholars from the disciplines, conversely, tend to lack the methodological competence and computational rigor associated with the digital humanities (and areas such as library science) in relation to working with data and materials. Among other things, this can lead to an endless series of "new starts" and to a dearth of systematic approaches. The critical sensibility and imaginary capacity of disciplinary scholars also sometimes seem stifled when engaging with digital environments. Furthermore, people can hesitate to step outside the perimeters of the disciplinary epistemic tradition, as when they engage with alternative expressive modalities such as academic installations.

While this description certainly stereotypes and simplifies complex interrelations and overlooks numerous exceptions and much excellent work on various levels, it addresses weaknesses both in the digital humanities and in the humanities at large. The digital humanities suffers from the overall lack of scholarly impact, which means that there are very few examples of achievements that have had a substantial impact on other fields or that have been intellectually remarkable on the level of the most significant work in other fields. And for a field whose foundational narrative typically refers back to the late 1940s, its supposedly emergent nature may not suffice to explain the lack of substantial intellectual impact. Work in the humanities disciplines has not engaged strongly with the levels of data structures and material manifestations where such an engagement could be intellectually rewarding. Furthermore, much expertise in design, information science, publishing, cultural heritage, and other domains is not yet optimally or systematically integrated in these processes. Big digital humanities emphasizes the potential of closer intellectual and material ties between the humanities and the digital humanities.

Johanna Drucker's notion of intellectual middleware points to one of missing elements: a space where these different levels, competencies, and intellec-

tual drive come together.⁹³ According to Drucker, “Designing the intellectual ‘middleware’ that frames artifacts with interpretation requires substantive engagement with the field and discipline.”⁹⁴ The notion foregrounds intellectual work but does not disassociate it from the technological, systemic, and material levels. On the contrary, all of these competencies and perspectives are needed to create intellectual middleware. In addition, the concept recognizes that such a middle space exists and is important. However, this recognition does not automatically mean that intellectually/materially significant and innovative work will happen. Through digital humanities, we can create conditions, processes, and environments that make such work easier and that serve as a place for meaningful and sharp intellectual and technological exchange. Such a place also needs to acknowledge the importance of the institutional, cultural, and social situation.

The particulars of intellectual middleware may be difficult to conceive because it sits between different levels and because it is conceptually challenging to entangle (and disentangle) complex research questions, data, and material manifestations. We need a language for articulating and critiquing middleware that is intellectually and materially sophisticated enough to be useful.

One way to develop this language is to ask questions in relation to existing platforms. Omeka is an “open source web-publishing platform for the display of library, museum, archives, and scholarly collections and exhibitions.”⁹⁵ But what notions of cultural heritage and associated institutions are built into the platform? And why does it *display* rather than *interpret* or *enact*? Do problems arise because the Dublin Core scheme must be used for items and collections? What role do the template designs play in the deployment of materials? What does it mean that the platform has an ontology based on items and collections? How does the browsing modality (as the primary way to explore the material) built into the platform affect the material structure of sites? What narrative structures are supported (and not supported) by the exhibit function? What kind of arguments are supported? Does it matter that the platform operates through a one-window interface? Why do most Omeka sites look so similar?

Discussions of intellectual middleware across platforms share some recurring parameters. One parameter is the operationalization of argumentative structures—that is, how scholarly arguments are made in different platforms. Arguments are neither consequences of their manifestation nor independent abstractions. They conform to certain patterns, and it seems likely that parameters such as “comparing” and “calling forth evidence,” part of classical rhetoric, have a life across different platforms. A regular search interface

based on the Dublin Core enables certain types of comparison and typically results in a list of isolated items that conform to the search query. It is much rarer that such juxtaposition is demonstrated visually (through visual overlay or other means), although geographical distribution has become a common way of representing search results. How can one make queries that allow for complex and interpretative searches? One model is faceted browsing, where many facets (variables) can be shown and selected and where filtering is typically direct, meaning that live interaction with the dataset is carried out.

A number of processes are commonly used to enact and understand complex relations and materials and operate on a more material level than high-level parameters such as “comparing.” Examples include scaling, focusing, overlaying, layering, juxtaposing, and framing. These parameters do not apply solely to the visual domain, although a visual bias exists here. Just like the parameters discussed previously, such processes can be useful both when comparing different middleware platforms and when thinking about what resources may be used to approach different intellectually driven issues. In most Omeka applications, items—an ontologically encoded entity in the platform—are represented in their own visual frames (one per item). The platform thus imposes cultural heritage as a list of decontextualized artifacts, although some of the intertextuality and connectivity is available in the Dublin Core data associated with the item.

An alternative entry point would be to start from the ontology laid out visually and stacking items that overlap ontologically. Such an ontological visual map would allow us to explore what parts of the ontology are not active in relation to the material or zooming in on ontological hotspots. Another approach would be to provide an alternative framing through a multiple-screen setup. One screen could hold the geographical information (showing the positioning of artifacts and allowing zooming), another one could show the ontological structure (where multiple categories and relations could be selected), and a third screen could show the five most similar or dissimilar items within the geographical and ontological focus. These images would be overlaid and shifted dynamically (five at a time). In addition, turning off parts of the ontological structure would enable us to see resulting changes in the visual landscape.

Intellectual middleware attaches to different types of infrastructures. Omeka is primarily associated with the web as a delivery platform. Other platforms have a much stronger relation to physical materiality. Shannon Mattern’s work on intellectual furnishings, for example, discusses the role of fur-

niture for knowledge work and how space articulates ideas or how ideas can be articulated by space. Mattern's project suggests "that we think about the literal furniture of our knowledge institutions—and how those material objects inform how we organize our media, structure our thoughts, and cultivate our values."⁹⁶ The use of the term *furnishings* instead of *furniture* in the title of her work seems to indicate a more abstract, middle layer, similar to the notion of intellectual middleware developed here, placed between the thoughts and the physical furniture. Mattern's work demonstrates the importance of remaining materially sensitive in this type of work. At the same time, we also must be careful not to be deterministic about the relation between the material and idealistic levels. Furniture does not condition us but creates conditions and to some degree structures our work.

Some infrastructure exists somewhere between Omeka and furniture, clearly engaging with structuring data and physical manifestations. A display system developed in HUMlab exemplifies the physical-digital infrastructure associated with intellectual middleware. This system was created for a HUMlab's December 2014 conference on knowledge production. One challenge of a multiple-screen setup such as HUMlab's (see chapter 4) is allowing the making of arguments across screens. This can be accomplished infrastructurally by having clusters of separate computers, working with very large desktops, or doing media signal-level processing, but ultimately, it requires a platform that can serve as a materially grounded "thought tool." The web system developed gives the user a schematic view of the space in question, facilitates upload of content, and deploys a simulation of the content and infrastructure in an interactive 3-D model. This tool allows arguments to be tested and shaped in a way that was practically impossible before. We need to be able quickly to explore different argumentative and experiential scenarios. The structuring provided by version 1 of the software imposes a number of constraints: it specifies two types of presentations (lightning talk and stepped talk) and does not allow web content or use of sensor technology. The whole platform is fairly visual-centric, and while it departs from the single-screen paradigm of most presentation software, it is still based on a notion of sequences (of decks of slides/content). These and other constraints and biases need to be discussed critically as part of reflecting on the tool and associated middleware, which in turn feeds into continuing development of this sketching tool for making multimodal scholarly arguments in a multiplex screen context.

Intellectual middleware often emerges in contact zones, and the final example comes from the productive intersection of environmental humanities

and digital humanities. The example relates to a planned project, where the intention is to challenge the predominant narrative of nature and the environment. This discussion was originally more instrumental, as a grant proposal necessitated outreach and some multimodal expressions. Over time, however, it became clear that the intellectual questions integral to the project had a considerable digital and medial inflection. What emerged was an understanding that creating alternative narratives of nature is intimately tied to knowledge production, expressive modalities, and infrastructural resources. Indeed, environment's predominant narrative is intertwined with the research infrastructures that created it and with the expressions that manifest it. Challenging such narratives is also a question of infrastructure, in the sense both of critically engaging with the infrastructural level of these narratives and of employing infrastructure and expressive modalities to enact humanities- and arts-based narratives. This matter involves not merely presentation or representation but also ontological, interpretative, and creative processes that are critical to the understanding, creation, and sociopolitical enactment of natural knowledge.⁹⁷

Conclusion

A big, inclusive notion of the digital humanities can solve many of the problems the field currently faces and can provide a sustainable and inviting model for the future. This notion takes into account many scholarly, educational, and technical challenges; the multiple epistemic traditions linked to the digital humanities; intersectionality through categories such as gender and race; the field's potential reach across and outside the humanities; and the digital as a boundary object. The liminal position of big digital humanities can meet these challenges and give it strong connections to the rest of the humanities, the academy, and the outside world. As the concept of intellectual middleware emphasizes, such work has to be intellectually driven, materially sensitive, and critically aware.