The Human Labor of Digital Humanities

A Note from the Trenches of Fabula(b) Theatre + New Media Lab

E.B. Hunter

Behind the Automagic Curtain

As most practitioners will confirm, building a performance is labor-intensive. Creating and rehearsing requires skill and endurance and hours of work. This slog to opening night is familiar to scholars, due in part to the field's long entanglement of practice with scholarship.[1] Scholars are also familiar with the labor that underlies knowledge production involving archival research, critical theory, and ethnography. When performances or knowledge production involve digital technology, the situation changes. Practitioners have long understood the effort required to incorporate digital technology into their work, but scholars do not have a commensurate embodied familiarity with this particular slog. Given the ubiquity of computers in 21st-century life, this absence of knowledge is to be expected. In a time when computers take the onerousness out of tasks from laundry to bibliography compilation, it is easy to overlook the human labor underlying digital technology's "automagic" effects—so automatic and effortless as to seem like magic. A thorough grasp of digital

1. For an overview of theatre technician labor, see Christin Essin's *Working Backstage* (2021). For an overview of how research and practice mutually inform one another, see Hazel Smith and Roger T. Dean's *Practice-Led Research, Research-Led Practice in the Creative Arts* (2009). Beyond these formal analyses, informal polls at professional gatherings typically reveal many scholars with experience in performance-making.

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work requires an awareness of its challenges. In my years of building digital projects, I have found the most challenging aspects are not what one might expect; that is, coming up with interesting ideas or even finding funding. Rather, finding and managing the human labor required to execute a project takes the most effort. Consequently, a scholarly understanding of digital projects must begin by identifying the labor structures that underlie such work.

Though theatre and performance scholarship is catching up to other disciplines' interventions in digital humanities (DH), publications have tended to focus on categorizing projects or analyzing outcomes.[2] Little attention has focused on the labor behind the design and build of digital projects. Given the expanding interest in integrating arts and technology both among individual scholars and at the institutional level, with multiple programs now combining theatre and performance with media arts, it is urgent to understand how human labor shapes DH work.[3] To shed light on some of these pragmatics, I focus on the praxis that grounds DH scholarship rather than on artistic work intended for a ticket-buying audience. Because lived experience can provide insights, I focus on the DH projects of Fabula(b)+ New Media lab, the project I launched in 2016 while a doctoral candidate at Northwestern University and continue to lead in 2023 at Washington University in St. Louis where I am an assistant professor. What I describe derives from the opportunities and limitations of academia in the US. This is not a handbook or manifesto; it is a record of how I have made things. However, some of the structures and processes described here may be transferable to other contexts, with adjustments.

Without a doubt, the journey to each beta release is rife with decisions that are easy fodder for problematizing—an unavoidable reality that attends any leap from theorizing to the trenches of making things. Deep in these trenches, project directors strive to be mindful about a process guaranteed to be imperfect. Using this record of my mindfully imperfect DH labors, I aim to shed some light on a complex process and thereby encourage more scholars to join the work under way.

Fabula(b)

An Overview

As its name suggests, Fabula(b) Theatre + New Media lab adapts the raw material of well-known stories for emergent digital technologies.[4] A practice-based complement to my written scholarship, the lab examines how immersive scenography impacts participatory spectatorship in productions that

Figure 1. (previous page) Thanks to mobile AR, Aldo Billingslea as Lear (right) and a 3D animated Fool appear in E.B. Hunter's kitchen in Reason Not the Need*, 6 May 2021. (Photo by E.B. Hunter)*

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2. Important contributions include Debra Caplan's overview of the state of DH in the field(s), "Notes from the Frontier: Digital Scholarship and the Future of Theatre Studies" (2015); Sarah Bay-Cheng, Jennifer Parker-Starbuck, and David Z. Saltz's *Performance and Media: Taxonomies for a Changing Field* (2015), which incorporates multiple taxonomies for the scholarly evaluation of theatrical work that significantly incorporates digital technologies; and Miguel Escobar Varela's handbook on quantitative methodologies for creating theatre and performance studies DH work, *Theater as Data* (2021).
3. The University of California at Santa Cruz's Department of Performance, Play & Design; the Ohio State University's Department of Theatre, Film, and Media Arts; and Texas A&M University's School of Performance, Visualization, & Fine Arts have recently joined the list of such programs.
4. In Latin, *fabula* indicates different kinds of plays; in Russian Formalism, fabula denotes the "raw material" of a story, in contrast to its *sjužet*, or organization into a plot (Baldick 2015). The etymological descendent "fable" implies a tale that has become traditional for a culture (*OED Online*, s.v. "fable [*n*]," accessed 12 October 2023, www.oed.com/view/Entry/67384).

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are faithful to canonical sources.[5] At Northwestern's Interdisciplinary PhD in Theatre and Drama, I essentially spoke Fabula(b) into being. Once I found a production team for my first project, I reframed the project description as the work of a "lab," rather than an individual person, and applied for a residency at The Garage, Northwestern's incubator for entrepreneurship and innovation. This residency added institutional legitimacy, a place to meet, and access to expensive technology.

In this first iteration, Fabula(b) stood apart from my more conventional dissertation, a written analysis of theatrical work created by other people. When I relaunched the lab in 2019 as a tenure-track assistant professor at San Francisco State University and now at Washington University in St. Louis, I integrated praxis with scholarship. Since Fabula(b)'s inception, I have served as the sole PI, conceiving the work, leading the historiographic research and dramaturgical analysis, and sourcing funding. I also recruit and lead each project's cross-disciplinary team to design and build the digital components. Across its three institutional contexts, Fabula(b) has had 25 student, faculty, and guest artist collaborators; received 13 grants; and created 4 digital projects.

Methodologically, Fabula(b) is grounded in "critical making"—the critically engaged creation of an object or experience constituting a site of knowledge production (Ratto 2011). Which is to say, lab projects are qualitative DH intended for a scholarly audience, not digital performance intended for a theatrical audience. Each project comprises two kinds of labor: collaborative work that leads to a digital beta, and written conference presentations and publications explicating the project's theoretical aims. Currently, the digital and theoretical components of the projects described below are at different stages of completion, a spectrum that illuminates how DH projects are "finished" differently from written publications. More information about each project can be found at sites.wustl.edu/fabulab.

Something Wicked

Fabula(b)'s first project was *Something Wicked*, a combat video game adaptation of the Norwegian invasion described in act 1, scene 2 of William Shakespeare's *Macbeth*. Playing as Macbeth and accompanied by a nonplayable character (NPC) of Banquo, whose AI is programmed to always get in Macbeth's way, a *Something Wicked* player hacks and slashes through the four waves of enemies described in the play's dialogue. Visuals are drawn from the scene's imagery—sparrows, eagles, a sword that "smoked with bloody execution"—and have an aesthetic inspired by the Bayeux Tapestry. The Bayeux was our visual touchstone in part because it depicts the Battle of Hastings, which took place in roughly the same historical period as the events of *Macbeth*. Additionally, the tapestry's figures evoke a stiff, 2D movement style that was easier to animate than 3D figures.

Having directed, taught, written about, and pondered this play for years, I chose this scene to adapt because, for a 21st-century popular audience, its dramaturgical function can be obscured by the long descriptions it includes of a battle the audience does not see onstage (Hunter 2020). Of course, all of Shakespeare's plays also carry the benefits of broad name recognition, which helps with interest in and fundraising for projects based on them, and of being well out of copyright, which helps with not getting sued. I crowdfunded the project's cash budget of $5,000, which paid for my collaborators' labor. In-kind resources included my residency at The Garage, a Segal Design Institute fellowship with mentorship and teaching release, and the salaries of my faculty collaborators. Over 11 months, two student programmers and one student technical artist from DePaul University built the game's digital components, working a few hours a week alongside their coursework. The sound designer was an instructor at Columbia College. For six weeks prior to the build, I worked with two game design faculty at DePaul to shape mechanics. Prior to involving collaborators, I spent 18 months iterating *Something Wicked* as a seminar paper and as a low-fidelity prototype in Scratch, the programming language MIT created for children. *Something Wicked* was my first experiment using a digital medium to shape audience/user participation. With the beta released and its theoretical intervention published, *Something Wicked* is complete.

5. For an overview of this participatory dynamic, see the article that accompanies *Something Wicked* (Hunter 2020).

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Bitter Wind

My second project, *Bitter Wind*, adapts Aeschylus's *Agamemnon* for Microsoft's HoloLens, an augmented reality (AR) headset. Unlike VR headsets like the Meta Quest 2 (formerly Oculus), which entirely overwrite the user's visual field and replace it with the digitally rendered world inside an enclosed headset, AR headsets like the HoloLens or Magic Leap 2 allow the user to see their physical environment, but with an overlay of digitally rendered animations that seem to populate the user's surroundings. The effect is similar to *Pokémon GO*, the popular AR game for mobile phones, but with far more robust graphics, sound, and functionality. Also unlike VR headsets, AR headsets thus far have been adopted by industry rather than individual consumers, due to the headsets' high price point and the minimal entertainment or education-focused content. *Bitter Wind* was an academic project, so its limited adoption was less of a concern.

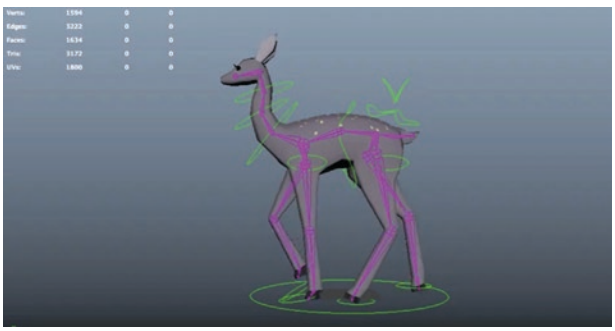

Figure 2. Testing Bitter Wind*'s deer asset, 5 January 2018. (Photo by E.B. Hunter)*

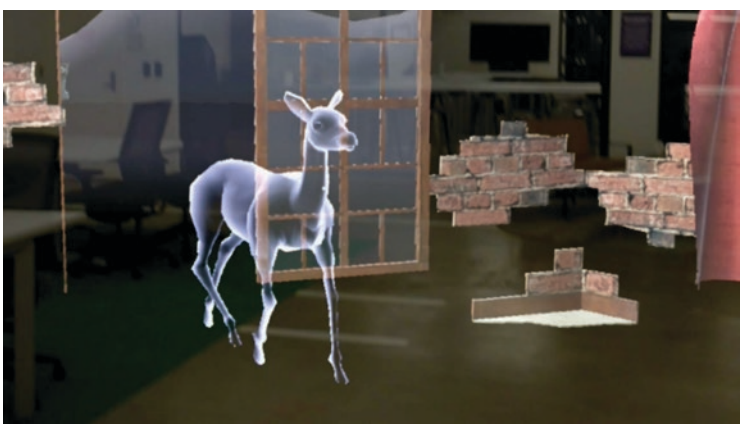

Figure 3. The finished deer asset in Bitter Wind, *20 June 2018. (Photo by E.B. Hunter)*

Of more interest to me was that, as a headset, it allows a user to occupy the ocular point-of-view of a character. And by displaying digitally rendered elements only the user can see and hear, the HoloLens also offers a unique opportunity to stage a character's memories in a personalized location (the HoloLens is its own full computer, so it can be used anywhere). As with *Macbeth*, I have long been preoccupied with *Agamemnon*; specifically, the character of Clytemnestra and the fact that her decade of waiting for Agamemnon to come home from Troy so she can murder him has transpired in her own home, where memories of her slaughtered daughter must surely haunt the walls. To capture this note of her character, we designed *Bitter Wind* such that users don a HoloLens and see digitally rendered windows, wall fragments, a ghostly girl, and a mural with pictorial elements drawn from the mythos overlaid onto the physical environment. By interacting with these elements, users learn their own spectatorial positionality is Clytemnestra herself.

As with *Something Wicked*, using a classical text boosted name recognition and interest for *Bitter Wind* and avoided copyright challenges, enabling me to amass resources. A $9,000 grant from Northwestern's Center for Interdisciplinary Research in the Arts provided the project's cash budget, all but a couple hundred dollars of which went to labor costs. In-kind support came from the 24/7 access to HoloLenses/developer stations and mentorship included with my Garage residency, as well as mentorship from Microsoft itself. The same two student programmers and student technical artist who worked on *Something Wicked* built the digital components of *Bitter Wind*, again spending

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a few hours a week alongside coursework for about 11 months. *Bitter Wind* had a shorter design timeline than *Something Wicked.* With my dissertation defense and, consequently, the end of my Garage residency approaching, I prioritized completing the digital build over long-range ideating. Fabula(b) released *Bitter Wind*'s digital component in 2018.

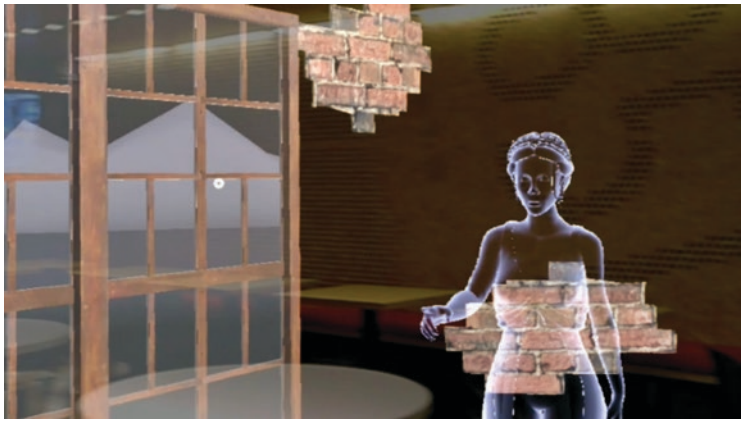

Figure 4. Bitter Wind's *Iphigenia asset points, telling the user where to stand, 20 June 2018. (Photo by E.B. Hunter)*

Reason Not the Need

Relaunched at SFSU, Fabula(b) created *Reason Not the Need*, which adapts the thunderstorm scene in act 3, scene 2 of Shakespeare's *King Lear* as a short AR app for use on a mobile phone. In this brief interaction, users hold up their phone to see a volumetric recording of actor Aldo Billingslea playing King Lear, accompanied by his Fool, played by an animated character modeled in the software Maya. Surrounding these two characters are digitally rendered storm clouds, rain, and the occasional lightning flash. As with the HoloLens, the app can be used in any location, and users see these digitally rendered elements superimposed on the physical environment, giving the effect that Lear and the Fool are in the user's own space.

Figure 5. Testing the 3D animation of the Fool for Reason Not the Need*, 21 February 2021. (Photo by E.B. Hunter)*

Fabula(b) designed *Reason* as a proof-of-concept for immersive theatre and media director Jo Cattell, then a Directing Fellow at Chicago's Goodman Theatre. Cattell and I had discussed *Reason* over the previous three years; when the 2020 lockdown closed most playhouses, we fast-tracked the project. We chose this scene for Fabula(b) to build because a staged thunderstorm necessarily draws attention to the technologies used for special effects, and Cattell's larger vision for the project revolves around Lear misusing technology until, estranged from society and abandoned by his family, he goes mad. Consequently, the thunderstorm scene offered the opportunity to show how the production would leverage digital technologies for interpretive purposes. Cattell is now using the proof-of-concept Fabula(b) created to source funding for the full-length, cross-platform adaptation.

Reason's cash budget of $13,800—from two internal grants, departmental work-study allocations, and other competitive internal support—paid for the labor of students and guest artists, plus a few hundred dollars for software. In-kind resources included faculty salaries, university-owned technology, the technical director's personal open-air studio space, and beta access to volumetric capture software. We designed and built the digital component of *Reason* remotely over the first 12 months of the pandemic lockdown, working a few hours a week alongside coursework and faculty responsibilities.

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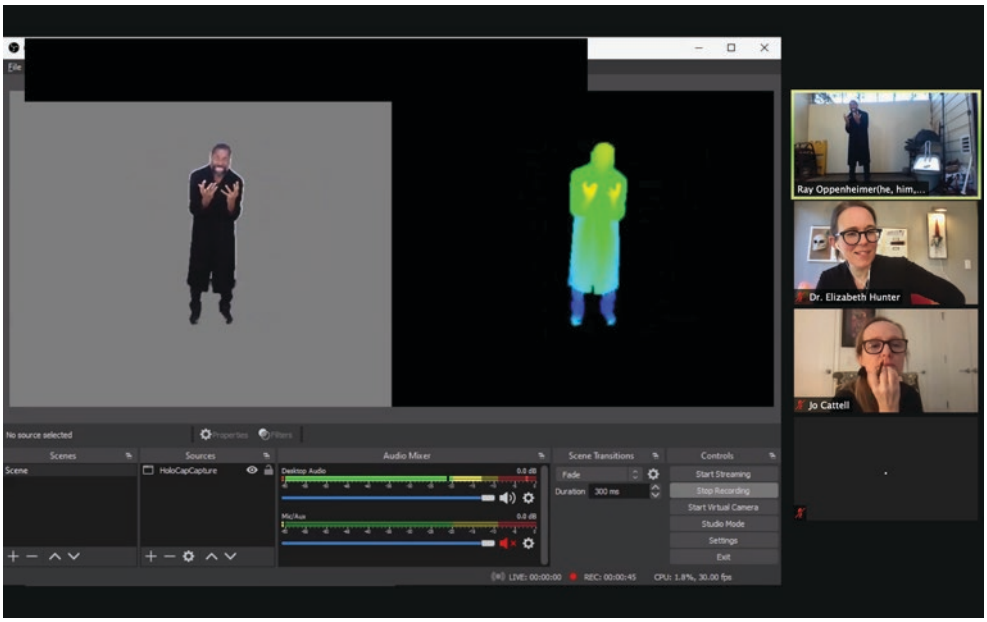

Figure 6. Pandemic digital humanities: Director Jo Cattell and the E.B. Hunter Zoom into a socially distanced HoloCap volumetric capture session for Reason Not the Need *with actor Aldo Billingslea (Lear) held in technical director Ray Oppenheimer's warehouse, 25 February 2021. (Photo by E.B. Hunter)*

Wretched Excess

The Untold Tales of Early MTV

Finally, in a shift to a different kind of well-known story, Fabula(b), at Washington University in St. Louis since 2021, finished the beta of a mobile AR app *Wretched Excess: The Untold Tales of Early MTV* in early 2023. Through geolocation, AR, and archival materials, *Wretched Excess* creates a tour of locations relevant to the early years of the cable channel Music Television (MTV). To experience this tour, users first travel to the correct GPS coordinates of a "tour stop" marked on the map within the app. Once on-site, they launch the app and point their smartphone camera towards the landmark described in the app's text. The phone's camera "recognizes" the landmark, much like a QR code, and superimposes over the physical landmark a preselected archival video related to the site. For example, to experience the New York City tour stop that appears in the beta, users can either travel to the deconsecrated Gothic Revival church at the corner of West 20th Street and Sixth Avenue, which was the site of the Limelight night club in the 1980s, or print out a photo of the building from Wikipedia. The building's rosette window functions like a QR code, in that pointing a phone camera at the window (in the right lighting conditions and without any obstructions) triggers the appearance of an archival video of Madonna's first interview on MTV, which took place inside the Limelight. By geolocating archival video at each "tour stop," *Wretched Excess* stages historiography as embodied practice, illuminating questions of cultural erasure and gentrification in late 20th-century US American history.

Competitive internal grants provided the project's cash budget of $55,000, over 60 percent of which supported labor costs for technical personnel. Additionally, on-campus centers focusing on humanities research paid for 1,100 hours of labor from research assistants, who worked five to eight hours a week during the semester and 20–30 hours a week in the summer. *Wretched Excess*'s in-kind support included faculty salaries, two student researchers compensated by internship credit, one student volunteer, my university-owned computer, and meeting space provided by my department and the university's Skandalaris Center for Interdisciplinary Innovation and Entrepreneurship.

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I began developing *Wretched Excess* in Fall 2019; the pandemic lockdown and my move from SFSU to St. Louis paused it until Spring 2022, when historiographic research began in earnest. Beginning June 2022, my student UX (user experience) designer spent six weeks, working three to five hours a week, creating a high-fidelity wireframe in Figma.[6] My technology partners began production and engineering in August and wrapped in April 2023, working on this project a few hours a week, on average, alongside full-time commitments. The *Wretched Excess* beta is a proof-of-concept, which I intend to expand in the future with more tour stops related to the MTV years.

Collaborators

Though the myth of the lone genius persists in the humanities, recognition is growing within DH that collaboration is more sustainable than expecting scholars to master any technology necessary for their work. Rather than teaching myself to code or animate, I have found it more efficient to learn enough to understand digital modes to the extent that I can oversee technicians using their superior skills to build a project. Such cross-disciplinary collaboration has been instrumental to Fabula(b), enabling the design and build of complex projects on a shorter timeline than would be possible by one scholar. Finding collaborators can be the highest obstacle to launching a project, more challenging even than securing funding.

Figure 7. The prototype for Wretched Excess: The Untold Tales of Early MTV, *25 October 2022. (Photo by E.B. Hunter)*

6. In app development, wireframes are simple drawings that show what elements of an app's interface will exist on which page; Figma is a collaborative software used for interface design.

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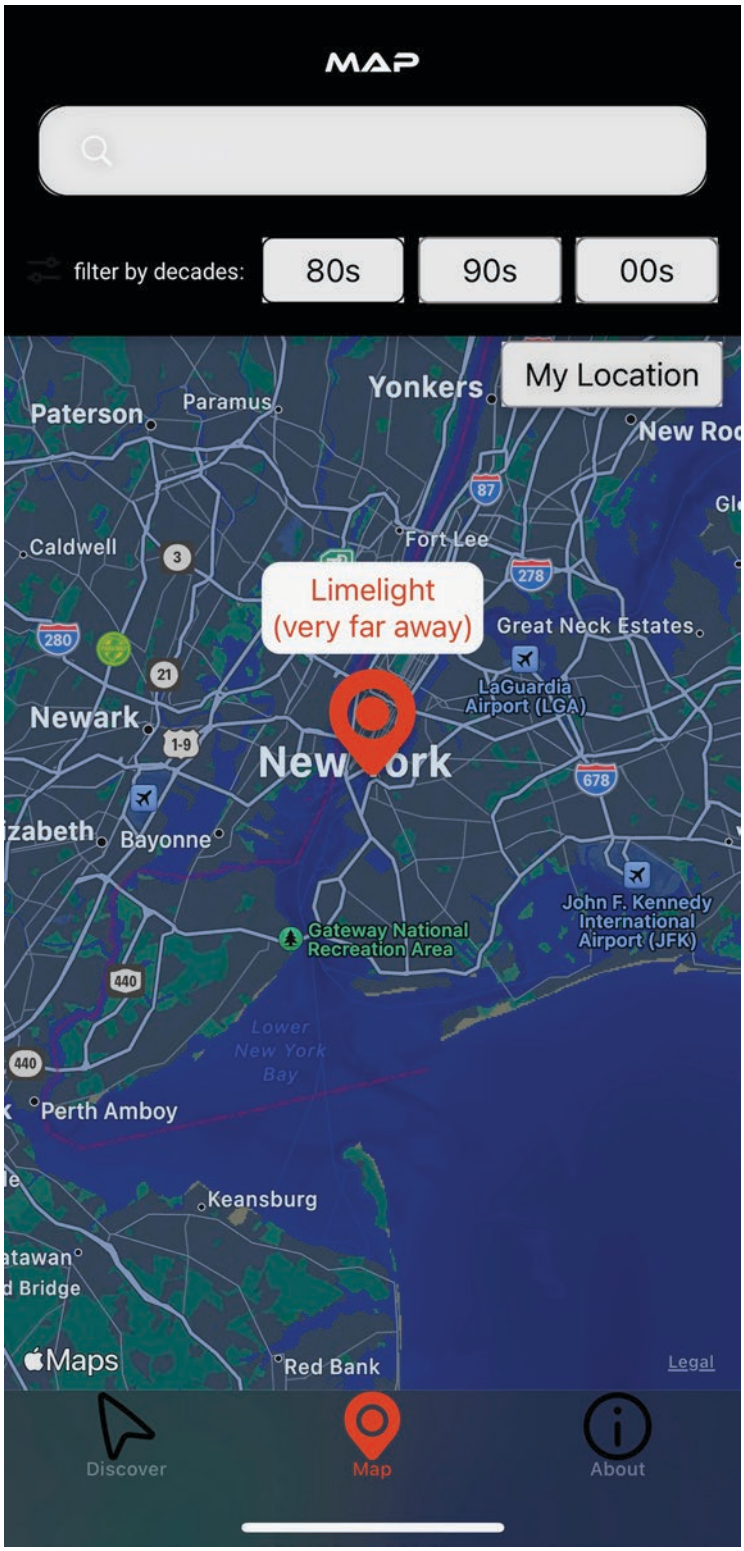

Figure 8. Wretched Excess: The Untold Tales of Early MTV*'s map screen, 25 October 2022. (Photo by E.B. Hunter)*

Most of my projects' technological elements have been built by students who are (1) enrolled in skills-based programs designed to prepare students for the tech industry and (2) within a year of the job market or graduate school. Many employers and graduate programs in my students' target industries place great value on their contributions to an outcome that was created through collaborative means. Consequently, students are typically motivated to join Fabula(b) for the job title and collaborative, showable outcome they will be able to add their portfolios.[7] Though many universities maintain directories of faculty research projects students can peruse, I have had more success finding students myself by reading the course catalog of relevant departments (usually computer science, film and media studies, human-computer interaction, and communication design). I email the instructors a description of my project, its funding status, and the roles I am seeking to fill, along with three asks: may I stop by the first 10 minutes of their most advanced courses to pitch the project, will they circulate the job descriptions, and do any suitable students come to mind? Many of Fabula(b)'s collaborators have signed on with an understanding that work would begin only if funding was secured. These prefunding commitments from team members with particular expertise have improved more than one grant application.

7. Exceptions include the programming for the *Wretched Excess* prototype, which was completed by the technology and storytelling consultancy Toasterlab; and the volumetric assets in *Reason*, which were captured and edited by Ray Oppenheimer.

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Sometimes I have to reach out to external colleagues. As I noted, the technical teams for *Something Wicked* and *Bitter Wind* were based not at Northwestern but at DePaul University and Columbia College, which have long offered robust video game design programs with pipelines to industry. In contrast, I found students from my own university for *Reason*, because I was at SFSU at that time, and they offered multiple relevant tech courses. Similarly, for *Wretched Excess*, more than one student lab member came from Washington University's Sam Fox School of Design and Visual Arts, which has a strong communication design program. Fabula(b) projects also include nontechnical students. *Reason*'s SFSU-based team, for example, included a theatre major applying for graduate school who created a production history of the thunderstorm scene, as well as business majors who wanted resume experience running agile workflows. *Wretched Excess*'s wiki-style screens depended on research from multiple humanities students in theatre, English, political science, media studies, and cultural studies.

Compensation

Expanding the integration of technology and the arts in academia requires a realistic picture of the costs labor poses for digital projects. At Fabula(b), labor is by far the largest budget line item, even though project budgets do not include contributions to my salary.[8]

Figure 9. The Limelight mobile AR tour stop of Wretched Excess: The Untold Tales of Early MTV, *25 October 2022. (Photo by E.B. Hunter)*

8. As is customary for humanities faculty, the university guarantees my salary. This contrasts the practice of "salary recovery" common to science, technology, engineering, and applied math departments, particularly at research institutions, where faculty cover some of their own salaries every year by winning external grants. I note this freedom from raising

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Fabula(b) Credits

Something Wicked, 2017
Project director, Elizabeth Hunter
Game designers, Doris Rusch and Mischa Hießböck
Programmers, Nick Segreti and Don Herweg
Technical artist, Paul Sullivan
Music and sound designer, Andrew Edwards
Something Wicked was supported by a crowdfunding campaign, a Segal Design Fellowship, and The Garage at Northwestern University.

Bitter Wind, 2018
Project director, Elizabeth Hunter
Project manager and programmer, Nick Segreti
Lead programmer, Don Herweg
Technical artist, Paul Sullivan
Additional art, Diana Kogan
Music and sound designer, Andrew Edwards
Bitter Wind was supported by Microsoft, The Center for Interdisciplinary Research in the Arts, and The Garage at Northwestern University.

Reason Not the Need, 2021
Project director, Elizabeth Hunter
Writer and director, Jo Cattell
Technical director, Ray Oppenheimer
King Lear, Aldo Billingslea*
Lead programmer, Niall Healy
Programmer, Miguel Mellado
Lead product manager, Sushant Kapoor
Product manager, Samarth Basavaraj Annigeri
Dramaturg, Jo Rhoades
3D animator, Nicole Carlson
Reason Not the Need was supported by The George and Judy Marcus Fund for Excellence in the Liberal Arts, the CSU Entertainment Alliance, and the Illinois Arts Council Agency
*Appears courtesy of the Actors' Equity Association, the Union of Professional Actors and Stage Managers in the United States

Wretched Excess, 2023
Project director, Elizabeth Hunter
Production and engineering, Toasterlab
Lead UX designer, Brian Cui
UX designer, Wolf Chen
Project manager and lead research assistant, Minjoo Kim
Research assistants, Aaliyah Allen, Marlee Fradkin, Maria Kane, Katie O'Quinn, Sydney Watt
The prototype for *Wretched Excess* was supported by the Office of the Dean of Arts & Sciences, the Center for the Humanities, the Humanities Digital Workshop, and the Interdisciplinary Project in the Humanities at Washington University in St. Louis.

Unfortunately, the realities of DH labor costs often conflict with funding dynamics that disproportionately prioritize purchasing new technologies. Budget structures vary widely across academia, but institutions often find technology more palatable to fund than labor because hardware and software

my own salary because it means my project budgets can be smaller than if they had to contribute to salaries of faculty collaborators. For descriptions of salary recovery in STEM fields, see Jeremy M. Boss and Susan H. Eckert (2004); and Charles Brenner (2014).

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do not generate sidecar costs like benefits and payroll taxes. Additionally, equipment is easier than labor to underwrite with budgets that have an expiration date, like strategic initiatives or one-time donations, because equipment is a one-time purchase and labor represents an ongoing cost. However, as this *TDR* issue reminds us, every item of digital technology implies the need for a human skilled enough to run it, maintain it, and teach others how to use it. Adding technology to an academic context without budgeting for the human expertise that technology requires is not only unethical and unsustainable; it is bad business. The perils of overlooking labor costs were illustrated in 2013, when the Los Angeles Unified School District spent $1.3 billion to give an iPad to every student in the district, but neglected to hire staff to maintain the technology or pay to train teachers to use the iPads. Though several missteps plagued this boondoggle—which led to multiple resignations and federal investigations—the largest was the failure to account for the cost of the human labor required to utilize the devices (Newcombe 2015).

One way to accommodate the expense labor poses for digital projects is to consider the many forms compensation can take within the economy of higher education institutions. Fabula(b) team members are compensated through legal tender (in the form of consultant fees, work-study stipends, or paid research assistantships), course credit, or CV lines for a tenure file (an item that, for many institutions, cannot include additional pay). The only exceptions to this rule have been two international students already at the maximum weekly employment permitted under F-1 visas. At their insistence, I let them attend lab meetings as their schedules allowed, but I remain conflicted about this arrangement. Portfolio-building opportunities without compensation exclude students who need to work full-time, but offering pay can exclude many international students. The administrative work of orchestrating multiple independent studies is not sustainable for instructors.

In my case, sourcing these forms of compensation has been ad hoc, because Fabula(b) has not yet had an institution-provided, renewable line of funding. To assemble the legal tender portion of each budget, I have utilized the nontraditional sources described above, as well as conventional academic sources like small- and medium-sized internal and external grants, as well as RAships sponsored by campus centers and initiatives whose missions include interdisciplinary work. Though Fabula(b)'s various institutional homes have offered different combinations of resources, this difference has only impacted the scope of a project, not its overall existence; that is, even in the most under-resourced context, there were still *some resources*. Across contexts, I have been more successful in securing support when I have articulated a given project's goals and outcomes with close attention to the priorities of an institution's strategic plans and mission statements. For example, Fabula(b) spent a brief reinvention as an "incubator," due to a local resistance to the word "lab."

Scope and Process

My syllabi invite students to design gloriously and scope effectively. For example, one student team of avid sports fans dreamt up a fully animated and participatory VR reenactment of famous moments in sports history. Based on their technical skills and the semester timeline, we trimmed it down to a 60-second 360° film of themselves reenacting one moment: NBA player Ray Allen's game-tying three point shot in the final moments of the 2013 NBA Finals, which forced an overtime and led to his team's victory. Instead of complex animations, they used five GoPro cameras to record themselves recreating the play, stitched the five camera angles together, and played the film back in a VR headset. In a different project, which took place the semester Chat GPT was released, a student imagined an adaptation of the Oracle at Delphi mythos, with the Oracle powered by the AI chatbot. Users could ask it questions inside a detailed VR recreation of the temple. The student also streamlined his project based on time and technology, ending the semester with a minimalist temple design and an Oracle visualized not as a humanoid woman, but as a brazier of dancing flames, which was far simpler to animate.

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Envisioning big and sorting out the details along the way also describes how I start Fabula(b)'s projects, each of which began as a fever dream of what I *would* build if I had unlimited funding and personnel expertise. I first imagined *Something Wicked*, for example, in the Serious Games class I took in my first quarter of doctoral coursework, where the final paper's parameters allowed us to assume an unlimited budget and a legion of expert personnel. However, as the design adage goes, the production values of every project are ruled by the iron triangle of *fast*, *polished*, and *cheap*, but project directors can only pick two of these. I gravitate towards *polished* and *fast*, in that order, with the caveat that these are relative terms, because "cheap" in the tech industry is not "cheap" in academia. I prioritize a polished look as a matter of preference; as my other priority, I have so far chosen *fast* rather than *cheap*, because grant disbursements usually include a fixed end date and the students in my lab graduate. Consequently, as a project's funding and collaborators solidify, I scale down my vision to direct funding towards a small, polished deliverable on a tight timeline.

To structure this timeline, I use processes deriving from agile methodologies (an approach to project management that originated in the software industry and now dominates several sectors), with variations based on the expertise of technical personnel, since many of Fabula(b)'s students learn industry-specific workflows in their classes. In addition to allowing students to gain portfolio experience using the standards of their chosen industries, varying labor processes by project makes each timeline more efficient, because the people building the digital components are using workflows they already understand. For example, the two business majors who worked on *Reason* wanted to use the project management system they learned in class instead of what I'd used for *Something Wicked* and *Bitter Wind*. Making this adjustment kept our team connected and on schedule through a build timeline set against the very challenging backdrop of a pandemic lockdown.

It is worth noting that any project timeline begins with a foundational decision: whether to design for broad accessibility or experimentation. These priorities are separate circles, not a Venn diagram. I have found that, while both approaches contribute to knowledge production, deciding whether Fabula(b) will design for a widely available technology (like a PC or Mac) or one few users can access (like the HoloLens, costing 10 times as much as a VR headset) requires being clear on the priorities and expectations of a project's funding entity. For example, Fabula(b) designed *Something Wicked* as a free download for Mac and PC because its crowdfunding campaign emphasized the game's educational, public-facing aspects. On the side of designing for experimentation is *Bitter Wind*: its funding entity, the Center for Interdisciplinary Research in the Arts at Northwestern University, prioritizes innovation. Designing for Microsoft's HoloLens only a few months into the release of its first model ended up connecting my team directly with the immersive technology sector at Microsoft. One of the core mechanics *Bitter Wind* utilizes, object recognition, was still in development at Microsoft and therefore quite buggy. I posted queries in the one or two tech HoloLens support forums that existed then, and, thanks to the continued allure of ancient Greek tragedy, the HoloLens team's PR person noticed. Due to her intervention, my programmers troubleshot *Bitter Wind* directly with Microsoft's engineers. This communication led not only to the improvement of object recognition in the HoloLens itself, but also to Microsoft inviting my lead programmer and me to be part of the inaugural Women in Mixed Reality Initiative (see Stoner 2017). Experimenting at the bleeding edge of digital technology in this way can allow humanities scholarship to be proactively inventive, rather than locked in the reactive mode that comes from being chained to widely available—i.e., dated—technologies. The economies of scale that exist within academia can and should support these experiments for DH in the 21st century.

The Future of DH in Theatre and Performance Studies

Just as theatre and performance studies benefit immeasurably from scholars' deep familiarity with the practicalities of creating physical performance and scholarship, so too will our understanding of

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the field(s)' place in the media landscape of the 21st century benefit from a deeper understanding of the processes behind creating digital work. Three of the human labor aspects behind building DH work in our field(s) are finding collaborators, securing compensation for those collaborators, and determining how everyone will build the final project. The four projects created by Fabula(b) Theatre + New Media lab represent a small segment of a growing academic interest in integrating arts and technology and demonstrate the necessity of embarking on DH projects with a grasp of the pragmatic challenges they can entail.

One such challenge that continues to lack a satisfying solution is preserving DH projects in a format other than the codex on acid-free paper—a format that seems destined to rule the archive in perpetuity. Much of the industry builds obsolescence into each iteration of technology (Weyler 2019), making it frustrating to create work for platforms intended to become unplayable media in just a few years. My HoloLens Greek tragedy, *Bitter Wind*, is about to meet such a fate. Microsoft no longer supports the first generation of HoloLens, and they have cancelled the development of HoloLens 3 and laid off much of the team's research and development staff, putting the future of its headset-based augmented reality program in question altogether (Tilley 2022). Neither is building for a more accessible context a foolproof solution to preserving a project's archivability. *Something Wicked* was built for Mac and PC platforms as a free download users can play with only a keyboard. Though the PC version is still accessible at the time of this writing, in 2019, Mac stopped supporting 32-bit apps like *Something Wicked*. Consequently, the Mac download of *Something Wicked* can only be accessed via Parallels Desktop (a paid software that can run Windows programs on a Mac), so the broad, simple accessibility with which we designed the project has evaporated.

Nontrivial labor would be required to recompile *Something Wicked* or to reassemble and adjust *Bitter Wind*'s animated holograms and sound cues for hardware similar to the HoloLens, like the Magic Leap 2 headset or mobile augmented reality. Fabula(b)'s projects do not generate the revenue required to sustain them, so I would either need to obtain new resources or divert a substantive amount of Fabula(b)'s funding, expertise, and labor hours from the lab's current project. Moreover, this process would need to be repeated every few years for every project. Would this continued support even be worth the cost?

As I have noted, sourcing funding for digital humanities projects is a heavy lift. Why would a scholar spend unrecoverable hours of labor propping up access to a project that has served its purpose? The moment we released the beta version of *Something Wicked* and *Bitter Wind*, each project's critical-making objective of creating a *thing* was achieved. The complementary written analysis of each project is also well in hand: *Something Wicked*'s article is in print, and a description and accompanying images of *Bitter Wind* will survive in an article and a book chapter. As the acid-free codex's tyranny of the archive continues, I remain in (quixotic) pursuit of a better solution to this particular labor challenge of creating theatre and performance DH work.

In happier news, a challenge that may be on its way to resolution is demonstrating a project's worth within the structures that organize academic labor: hiring, retaining, promoting, and awarding tenure. Historically, another key obstacle to creating digital projects across humanities fields has been the struggle to have one's labor as a project director "counted" as scholarship. Setting aside the incurable suspicion some academics have of collaborative work and new technologies, one reasonable critique of digital projects is that publishing them really can be as simple as hosting a project on one's own website. Regardless of internal rigor, this absence of external input can make a DH project seem more like a self-published blog post than a peer-reviewed article. Consequently, the only way for digital projects to garner scholarly legitimacy commensurate with a rigorously edited publication has been for the director to create it and *then* write about it—a double lift that only worsens the ever-escalating arms race of the academic job market and tenure expectations.

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Fortunately, a solution to this obstacle launched in January 2020, with the first issue of the peer-reviewed journal and project registry, *Reviews in Digital Humanities*. Edited by Jennifer Guiliano and Roopika Risam, whose efforts to improve the visibility of, recognition for, and access to DH have been field-changing, *Reviews in Digital Humanities* "facilitates scholarly evaluation and dissemination of digital humanities work and its outputs" across a range of digital media (Guiliano and Risam 2020). Since its launch, the publication has provided peer review, registry, and significant visibility for over a hundred projects, marking an important milestone in DH's long journey to the recognition it deserves in the academy. With the emergence of another inflection point in DH—that of embodied technologies like augmented and virtual reality—representation in the digital age draws ever closer to the aesthetic and critical vocabularies of theatre and performance. As scholarship and practice respond to these developments, it will be imperative to foreground the human labor that lies behind each opportunity the 21st century media landscape promises for our ever-evolving fields.

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