DHQ: Digital Humanities Quarterly
2018
Volume 12 Number 2

Reading, Making, and Metacognition: Teaching Digital Humanities for Transfer

Paul Fyfe <paul_dot_fyfe_at_ncsu_dot_edu>, North Carolina State University

Abstract

This paper argues that digital humanities pedagogy can provide unique forms of attention and engagement for students at the outset of their college and university careers. It reports on courses taught at NC State University and elsewhere which use digital humanities pedagogy under the aegis of studying transformations in "reading." With attention to the mediation of attention itself, these courses can cultivate habits of self-reflection to aid students in any disciplinary pathway. Furthermore, digital humanities pedagogy can offer a transferable project-based model of instruction, helping students to develop metacognitive skills as well as to acculturate to different environments across campus. Ultimately, this essay underscores the need to articulate strategies of educational transfer in digital pedagogy.

Look around the penumbra of digital humanities pedagogy and you'll find abundant attention to reading. Courses in book futurism, text technologies, and mediated reading practices show up frequently in what many digital humanists, however identified, are teaching. Consider just a few recent examples: Kari Kraus, "Book 2.0: The History of the Book and the Future of Reading" (University of Maryland, 2012), Mark Sample, "History and Future of the Book" (Davidson College, 2014), Ryan Cordell, "Technologies of Text" (Northeastern University, 2014), Rita Raley, "Distracted Reading" (UCLA, 2015), Andrew Logemann, "The Future of Reading" (Gordon College, 2016), not to mention, beyond individual courses, the numerous assignments and instructional resources that support such interests.[1] Many of these courses express their instructors' disciplinary backgrounds in writing and rhetoric, library science, book history, or media studies, but their reach is even broader. As Rachel Buurma suggests with her entry on "Reading" in the volume *Digital Humanities Pedagogy*, changes prompted by digital technologies raise "a new pedagogical challenge for teachers whose fundamental charge is to teach students 'how to read'," compassing teachers and courses across an educational spectrum [Buurma 2015]. 1

Questions about technologies and how we read also aim at the looming problem of attention itself. Numerous scholarly and popular commentators have described how modes of attention are changing, for better and worse, in the digital age. In her book *How We Think*, N. Katherine Hayles glosses an extensive literature on distraction and cognition and, in response, proposes that we take multiple configurations of "reading" as inspiration for designing new courses, curricula, and collaborative research opportunities. Hayles urges teachers to approach human attention "both as a design strategy and as a conceptual framework," or as both form and content [Hayles 2012, 12]. Among Hayles's specific recommendations include a comparative media studies approach, project-based instruction, and classrooms that connect to multiple collaborative spaces offline and on. Courses on reading have developed all of these opportunities in the service of digital humanities pedagogy. 2

Such courses might help orient students to a university education more broadly. This work often falls to first-year experience (FYE) courses, common reading programs, or learning communities which transition students to the diverse community and habits of mind of the college experience [Ferguson 2006] [Lang 2007]. These experiences often attempt to nurture students' curiosity, interdisciplinary thinking, and participation in a community in "which they are not likely to have imagined themselves as members" [Moser 2010, 92] (see also [Colarulli and McDaniel 1990]). Courses on 3

"reading" can meet many of these same goals with their disciplinary openness, emphasis on collaborative praxis, and student reflections on the very conditions of their learning. A digital humanities pedagogy might do even better, turning attention not only to the evolving platforms for reading, but to the institutional spaces in which entering college students can find support and even inspiration for their own work beyond the course. In this essay, I want to show how these courses can bridge disciplines and connect different learning spaces on campus. Such an approach extends the work of knowledge creation beyond the classroom community to other spaces and professionals, especially in the library, and thereby enriches students' sense of the distributed facilities and extra-disciplinary partnerships which might contribute to their academic and social goals during their college career.

4 Ultimately, I want to emphasize the potential for *transfer* in digital humanities pedagogy. Transfer is commonly defined as learners' ability to recognize when and how their skills, store of knowledge, or critical thinking strategies might apply in different domains [Perkins and Salomon 1988, 22–23]. For example, when a composition student uses principles of reasoned argument in their writing for another course. Yet transfer is a complex phenomenon. Recently, scholars of transfer have emphasized such properties as adaptation, enculturation, repurposing, and transformation [Wardle 2013] [Moore 2017] [Anson and Moore 2017]. Transfer is the subject of extensive research in education, cognitive psychology, and composition studies, yet it rarely appears, or shows up in other guises, in discussions of digital humanities pedagogy, *even though transfer may be one of DH's most powerful claims as an educational experience*. As Anne B. McGrail suggests: "Transfer happens best in the context of integrative learning. Understanding is developed across disciplinary boundaries and likely to be retained across contexts. Because DH is collaborative and cross-disciplinary, engaging multiple knowledges at once, it is more likely to create knowledge transfer" [McGrail 2016, 20]. Rebecca Frost Davis agrees that "digital projects, networks, communities, and resources provide ample opportunities for students to transfer their learning" [Davis 2017, 36]. Courses on reading may sharpen the focus on knowledge transfer in DH, in part by helping students "become acquainted with the problem of transfer in itself" [Perkins and Salomon 1988, 30]. In other words, attention to mediated attention ("reading") asks students to reflect upon their own processes of learning and, better still, to access and design new parameters for their own education, whether within a discipline, across domains, or in concert with new spaces, persons, and partnerships. If courses about reading are timely in the context of digital transformations, they also offer early-career students a timely exploration of their own learning ecology, helping them to realize and tactically access the knowledge work beyond their curricular strictures.

Comparative Textual Media

5 For the past several years at NC State University, I have experimented with courses about reading as a first-year seminar experience for our university's honors program.[2] A seminar is required of all first-year students in the program, intended to engage students in "discovery, inquiry, and creativity" across a variety of disciplines ["Seminars" 2014]. As an FYE, it helps cultivate community by bringing students from all sorts of different academic tracks. My own courses have included large proportions of students from engineering and the sciences, with only a few from the humanities and social sciences and precisely none from my home department of English. That mixed disciplinary enrollment comes by design, intended to enculturate students into new academic communities, broaden their sense of research possibilities, and, more implicitly, to help them cultivate strategies for transfer, or what the program calls "the integration and appreciation of knowledge across disciplines" ["Seminars" 2014].

6 Paul Fishwick and others have suggested how digital humanities can introduce students — and especially engineering students — to an interdisciplinary context for inquiry [Fishwick 2015a] [Fishwick 2015b] [Everett 2016] [Goldschmidt 2017]. Yet I do not use the term "digital humanities" as potentially limiting the cross-disciplinary affiliations which these courses hope to foster (e.g. between design and biology). Furthermore, as Ryan Cordell has persuasively argued, "digital humanities" as such does not capture the undergraduate imagination, and ought instead to be integrated into undergraduate programs it can positively impact [Cordell 2016]. Cordell refashioned his Intro to DH course into an upper-level experience in the English major. I kept the introductory framework to serve first years while opening the subject to questions of "Reading in the Digital Age" — the course's initial title. Like many of the courses this essay mentions at the outset, mine explores how historical and contemporary mediums reshape meaning, how modes of attention change alongside, and how we might creatively and critically design our own interventions in this landscape.

We sample from ongoing academic research and try creative activities that span book history, media studies, digital humanities, electronic literature, and critical making. But those areas are not the course's avowed topic. Rather, they allow for multiple disciplinary pathways and the hands-on, project-based, integrative learning that undergirds knowledge transfer [McGrail 2016, 20].

7 The course title has evolved to "Reading Machines," inspired by Stephen Ramsay's eponymous book, by the appeal to the mechanisms or materiality of media in Kirschenbaum's work, and by the name's potential appeal to students coming to NC State for STEM [Ramsay 2011] [Kirschenbaum 2008]. Not quite a course about "reading," it might more properly be called "comparative textual media (CTM)" as proposed by Hayles and Jessica Pressman [Hayles 2013, vii]. It endeavors to pursue the "productive tension and interplay" among analysis, critique, and "an ethic of making" that Hayles and Pressman identify as CTM's distinctive paradigm and that, I will argue, also encourages transfer [Hayles 2013, xv]. In what follows, I will explain how the course works and, by extension, how digital humanities pedagogy can stimulate transfer at multiple levels.

8 Few students enter the class knowing what its title means or what kind of class they're in for. Few have any experience in critical media analysis. Many of these high-achieving students worry about uncertain expectations or their lack of skills. This challenge is endemic to any intro to digital humanities course. To get students involved, much less to establish the conditions for transfer, depends on something like what Nancy Sommers and Laura Saltz have identified about first-year writing. When do students start thinking *with* writing, rather than just completing a writing assignment? In what circumstances do they continue to use what they've learned, as opposed to clearing a course requirement and moving on? According to Sommers and Saltz, this transformation occurs when students are encouraged "to see themselves as novices" including "an open attitude to instruction and feedback, [and] a willingness to experiment" [Sommers and Saltz 2004, 134]. Comparative textual media requires an almost continuous apprenticeship to new and old contexts — for students as well as the instructor. Indeed, digital humanities pedagogy often puts the instructor and students on the same playing field, experimenting together on questions or methods for which neither definitive answers nor expertise may exist.[3] Sommers and Saltz also found that writing mattered more to students when they felt like they were "entering a live debate" which honored their own perspectives, approaches, and projects as contributions to the discussion [Sommers and Saltz 2004, 137]. Certainly debates about reading and media are both current and lively, connecting students' experiences to the evolving questions of pundits, journalists, and scholars across different domains. Both frameworks — the novice and the interlocutor — take work to develop, and depend significantly on establishing trust and mutual respect.

9 A course about reading, or about forms of attention, does not aim for expert knowledge. Instead, it makes students reflect, turning their own experiences into the subject matter of the course. In Hayles's terms, it makes human attention the design strategy as well as conceptual framework of the course [Hayles 2012, 12]. In terms of the conceptual framework, many of the exercises in "Reading Machines" simply aim to get students to notice and explain "the critical insight of media studies[:] that we should not separate medium from meaning" [Hayles 2013, 201]. As Hayles suggests, this is best accomplished by blending instructional styles: students analyze texts, experiment with hands-on practice, and explore different collaborative spaces. Students should also be encouraged to reflect, in informal as well as structured ways, about all of these course experiences. Reflection underscores time and again the self-critical awareness at the heart of comparative textual analysis. David Levy has described similar "mindfulness" techniques for assessing and making strategic changes to one's uses of personal technology. Levy's exercises encourage attention to lived experiences of technology beyond the false binary of whether or not Google is making us stupid [Levy 2016, 12]. Students must attend both to "task focus" and to "self observation," developing habits of critical reflection as well as metacognitive monitoring [Levy 2016, 4].

10 What this looks like in the classroom varies according to instructor and institution. In our course, we undertake several weeks of comparing platforms for reading. We sample a single text in different formats including paperback, on the Kindle, through the speed-reading browser plugin Spritz, and using a web-based social reading and annotation platform. Along the way, students are asked to read recent critical discussion about changes to reading, as well as to respond to reflection prompts in their course journal. They also try assignments that use other modalities, such as capturing data about and then visualizing their own media diet, as well as hands-on exercises in craft. Bringing craft into the classroom

can really amplify attention to attention. Levy — who himself took a two-year break from the tech world to study calligraphy — claims that craft demands its own mode of attention to the "interaction between body, materials, and […] emerging forms" [Levy 2016, x]. Pairing analysis with craft, theory with practice, can powerfully aid the teaching of media analysis. For example, when we read about the fate of handwriting in schools or a scholarly article about the different cognitive circuits that handwriting might operate, we also try an exercise writing with feather quills and ink on rag paper, sometimes with a guest visit from a colleague who speaks about paleography. Inspired by assignments like Cordell's lab "Simulating the Scriptorium" and Jeffrey Makala's "Reading by Candlelight," this exercise slightly differs in asking students to compose "artisanal tweets" that they subsequently post somewhere on campus. Afterwards, students reflect in their journal on the materiality and experience of writing, as well as what they learn from the distortions of simulating new media with old. When the class listens to a portion of an audiobook, they also produce their own 1-2 minute recorded snippet of our course text. Beforehand, we discuss the requirements of a good performance, tuning the body as a speaking instrument with attention to speed, cadence, facial expression, and posture. The experience of listening to audiobooks usually encourages students to reflect on attention and distraction. The attempt to actually craft a recording — with the option of sharing it with the class — shifts their focus to the labor of voice actors, the ambient noises of their own environments, and how their vocal embodiment might affect a listeners' experience or even trigger their prejudices.

11 Exploring the book as a physical object can also deepen students' attention to things, interfaces, and uses of mediums. Like other classes, including Joanna Swafford's at SUNY New Paltz, we have scoured our library stacks for marginalia to submit to the BookTraces project [Swafford 2014]. The exercise also offers the class an opportunity to hear from a librarian about the collection itself: how did these books even get to the stacks, how has that collection changed, and why? Thinking about the contingent circumstances not only of marginal writing, but of the books themselves, deepens in a subsequent visit to NC State's Hunt Library, where practically the entire print collection (1.5 million volumes) has been transferred to high, gleaming rows of aluminum storage boxes, fetched by industrial robots (aka the bookBot). The rest of the library comprises numerous spaces for casual and collaborative use. Now these very spaces become the focus of our attention, as we walk through with the library's user experience director, discussing how its architects and experience planners designed spaces for different kinds of interaction. Then students reflect on their own uses of spaces to study and speculate on what they might do differently going forward. These exercises double as an orientation to the campus libraries, but because they are scaffolded by our concerns for acts of reading, mediation, and attention, they invite students to realize the significance of those spaces for their own pursuits.

12 Comparative textual media benefits from the collisions of old and new forms, as well as different instructional modalities. These are fully embodied in Amaranth Borsuk's book of pop-up electronic poetry *Between Page and Screen* [Borsuk and Bouse 2013]. And even more so in Borsuk's encouragement for people to make the book from scratch. Thanks to the DIY edition Borsuk makes freely available online as well as the generosity of NCSU Libraries' preservation librarians, students learned a few bookbinding techniques and then assembled their own copies of *Between Page and Screen*. These workshops move the class into what Levy calls "slow world practices," as students thread needles, stitch signatures, and help each other through what is, to all but a few of them, an entirely new skill [Levy 2016, xi]. Though *Between Page and Screen* is a challenging text to read and interpret, the exercise ennobles participation from students who don't self-identify as critical readers. As Sommers and Saltz suggest, students appreciate the simple fact of having produced something tangible, a form of knowledge creation that inheres in the craftwork, collaborative experience, and resulting object as much as from our critical insights [Sommers and Saltz 2004, 129].

Figure 1. Book binding workshop in the NCSU Libraries preservation lab

Having created a book, we also take one apart, using the experiences of each to expand the dimensions of analysis. For this, “Reading Machines” adapts Brian Croxall’s wonderful exercise of the life cycle of digitization and text analysis [Croxall 2015]. This begins with another visit to the preservation lab where the instructor sacrifices his paperback copy of our long-form reading (most recently *Mr Penumbra’s 24 Hour Bookstore*) to the book guillotine. Biblioclasm is a surprisingly affecting experience for students; several feel too squeamish even to hold the sliced spine of a cheap paperback. Disbound pages in hand, we meet a media production librarian in the Digital Media Lab who takes the class quickly through a workshop on document scanning and OCR. Given sequential chunks of the novel, students work in pairs to scan, OCR, correct against original pages, and upload their e-text to a shared folder, which the instructor collects and normalizes into a single file. I invite a colleague who talks from a computer science perspective about how computers do and do not read, building up in pseudocode and Perl a set of simple queries. Following Croxall’s model, the class then pursues experiments in text analysis using a set of basic tools including Textalyzer (http://textalyser.net) and Voyant (http://voyant-tools.org), recording their methods and speculations in their journal, and sharing and refining those inquiries collectively with the class. 13

Teaching DH for Transfer

As I hope these examples suggest, teaching comparative textual media can usefully blend critique with hands-on experimentation, opening a course to multiple modes of attention, to students of different skill sets, and to varied spaces for collaborative work across campus. It affords an experience of apprenticeship which may open students’ dispositions to become “knowledge creators” in new domains ["Seminars" 2014]. Yet the next step for digital pedagogy, according to Rebecca Frost Davis, is “to transfer the methodologies that have been developed for recognizing and studying writing 14

transfer” into course design and student activity [Davis 2017, 36]. For transfer to occur, students must also recognize and apply their abilities in new situations. To this point in the essay, I have described exercises that operate as “low road” transfer, in which students might apply their existing abilities or insights within a fairly familiar context. For instance, a student who already knows how to sew readily sees its application in the unfamiliar domain of book binding. More needs to happen for “high road” transfer, or the ability to abstract, transform, and apply concepts or methods between unfamiliar domains [Perkins and Salomon 1988, 25]. High road transfer depends on greater self awareness, a critical vocabulary which persists across domains, and structured training in how and when to use transferable problem solving [Halpern 1998, 451–54]. There are extensive discussions about teaching for transfer which instructors in digital humanities could incorporate, bolstering the more implicit claims for transfer as DH bridges disciplines, academic professions, and public humanities work.

Courses which emphasize reflection and mindfulness go some way toward establishing the base conditions for transfer. The next step may be to foreground the subject of transfer itself. What skills, vocabulary, mindsets, or processes might students use in other classes or professional situations? How can they carry not only habits of self awareness but a plan for dealing with challenges in other domains? Among the ways of addressing these questions, our course used a structure called TH!NK currently in place at NC State University as part of its quality enhancement program. The TH!NK program models a process cycle for creative and critical thinking. This cycle moves through discrete stages: a) assess the task, b) evaluate needs, strengths, and weaknesses, c) make a project plan, d) set milestones and monitor performance, e) reflect and make adjustments, and f) effectively communicate the results [Ambrose et al. 2010, 193] [Carson 2015]. This cycle means to be generalizable to any problem-based or project scenario, in whatever discipline. Furthermore, it builds upon a model of metacognition. Metacognition moves beyond student reflections on a course topic to students’ awareness of their own thinking process. Levy makes a similar distinction about mindfulness: attention on a task compared to attention on one’s self. The advantage of metacognitive (or mindfulness) training is how it helps students monitor and control their own performance, which is especially vital for students new to higher ed. As Ambrose et al. argue, “one of the major intellectual challenges students face upon entering college is managing their own learning” [Ambrose et al. 2010, 191]. Thus, teaching students to think about thinking — at which courses on reading or comparative textual media can excel — can profoundly impact their educational career.

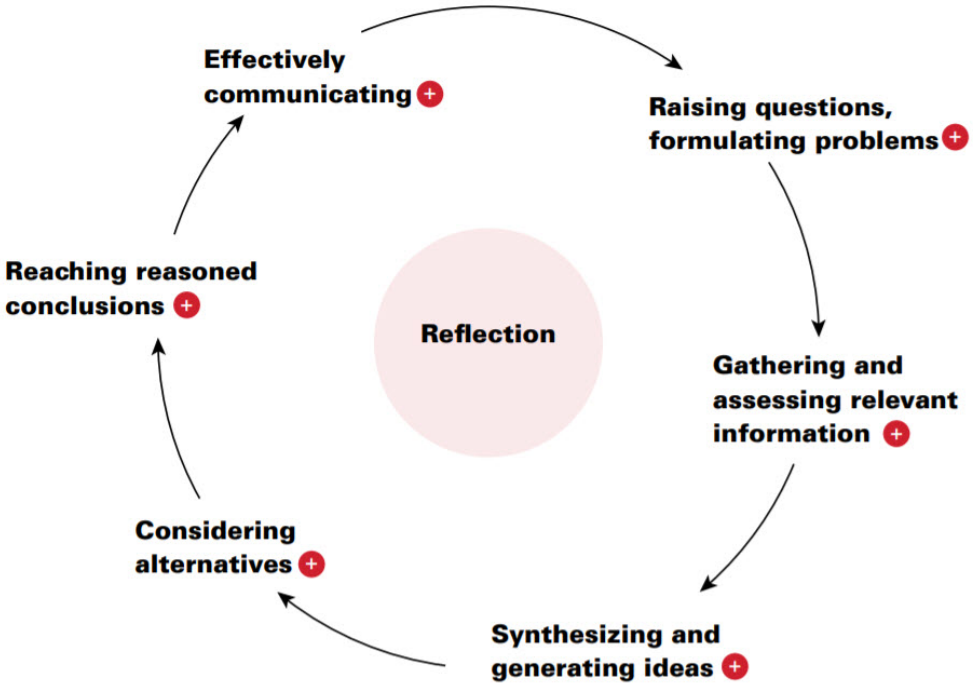

Figure 2. TH!NK model of critical and creative thinking behaviors

A metacognitive cycle implicitly shapes many project-based assignments. This cycle also goes by other names, including the drafts, peer review, revision, and reflection of writing essays, or the design process cycle. In fact, several of my students recognized the metacognitive model as similar to an engineering and design process cycle they learned in other classes. As Sheridan et al. explain, “Design processes are usually conceptualized in terms of an iterative sequence of ideation, or finding a problem, drafting ideas, creating a product, reflecting, and revising” [Sheridan et al. 2014, 508] (see also [Cross 2011]). Descriptions may vary for the elements of this sequence. But its commonalities all support metacognitive awareness. My goals in this course have been to foreground that cycle, get students repeatedly to practice through different project-based assignments, and emphasize its transferability to other disciplines. 16

Design and making present excellent opportunities for developing critical and creative projects that meet the pedagogical goals of digital humanities as well as establish models for transfer into other disciplines. Intro to DH courses and kindred courses on reading offer some great approaches for turning comparative textual media into project-based learning. For instance, I adapted a “design fiction” inspired by Mark Sample and Owen Mundy: students had to imagine and propose a new app for the iOS App Store — on the condition that it broke Apple’s terms of service in an illuminating way. While, unlike Mundy’s computer art class, we stopped short of creating any software, this assignment provoked creative ideas for digital applications and required their explanation in critical context. Yet asking students to submit a creative project, or anything for which you cannot show them existing examples, can cause unease about grading and assessment. What are the expectations? Foregrounding the metacognitive process cycle helps here, too. Rather than grade the creative substance of students’ ideas, instructors can weigh the sequential submissions of the project cycle. For my assignment, students had to submit each of these on the way to their finished project: a needs assessment, a plan, peer feedback, responses to that feedback, and a process paper. Requiring these incremental submissions also helps formalize discrete moments within that process cycle. 17

“Reading Machines” culminated in a more elaborate project, one that required students not only to consider their own process cycle but the role of extracurricular spaces and collaborations within it. This assignment was largely inspired by the “reflective design” projects of Kari Kraus’s students, described in their collaborative article “Bibliocircuitry and the Alien Everyday,” as well as by the pedagogical opportunities of NCSU Libraries’ recently opened Makerspace. Students 18

were asked to read the “Bibliocircuitry” article and, by following their design process cycle over several weeks, create a “reflective design” prototype of a reading machine, loosely construed [Hancock et al. 2013, 75]. Their prototype did not have to function so much as become an object to think with, something that, like the examples from Kraus’s class, provocatively altered our relations with a medium’s protocols, materials, or uses. The prototype would be supported with a written rationale and a demonstration session in which groups gave Pecha Kucha-style lightning talks. I also required and collected project plans, self-generated milestones, and reflections from individuals about the merits or shortcomings of their process. Librarians at the Makerspace offered a safety orientation session, backgrounds on critical making, and support for student groups as they developed their projects over multiple weeks.

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Making adds an important material dimension to metacognitive process cycles which, in much published criticism, can seem limited to what happens in learners’ heads. Cognition is also an unfolding, embodied relation. The authors of a recent study on makerspaces and learning use the concept of “constructionism” to emphasize the “centrality of developing an idea and then designing and creating an external representation … which supports learners’ conceptual understanding” [Sheridan et al. 2014, 507]. Design-based pedagogy like Kraus’s shows constructionism at work, binding the metacognitive process to the material insights of creating an object. In fact, Kraus’s “Bibliocircuitry” experiment is the first entry under the keyword for “Praxis” in *Digital Pedagogy in the Humanities*. That entry celebrates an ethos of making within praxis, “the process through which ideas become objects in space or actions in time” [Nowviskie et al. 2015]. As another way of bridging these domains, Jentery Sayers proposes “transduction literacy,” cultivating in students the “knowledge of how this material becomes that material” which involves “strategic repurposing,” “trial and error,” “collaboration,” “process documentation” and “self-reflexive building” [Sayers 2013]. It would take only a few tweaks to turn Sayers’s model into a metacognitive process cycle, ready for praxis-based digital humanities instruction.[4]

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The projects in “Reading Machines” showed evidence of low and high road transfer. Students were encouraged to build upon the strengths they might already possess, or to pursue whatever new techniques (from 3D printing to sewing to laser cutting to physical computing) or course concepts most interested them. Faced with a very unfamiliar assignment, some students gravitated to domains in which they already felt comfortable. For example, two computer science students decided to mash up components of the Raspberry Pi microcomputing system with our course paperback — that semester, *The Adventures of Sherlock Holmes*. They attached a motion-sensing camera to peek over the top edge of the book, with the Raspberry Pi taped to its back cover. The camera snapped a picture anytime it sensed movement: capturing images of the reader as well as the book's movement in space. Along the way, we discussed where their project was headed, what kinds of “alterity relations” it could expose, and how it connected to our course experiences [Hancock et al. 2013, 74]. The students referred back to our marginalia hunt and explained how their camera tried to answer the difficult problem of the history of reading, or learning about a book’s physical passage through the world. The project also transformed the paperback into a surveillance machine. Much to these students’ surprise, when they shared their working prototype with friends on their residence hall, their peers were far more suspicious of the augmented paperback than the smart phones they owned — machines far more capable of harvesting personal data. This led the students to reflect upon smart phone design and users’ situational (sometimes paradoxical) responses to technology.

Figure 3. Sherlock Holmes surveillance book by Ulises Gutierrez and Andrew Mauk

As a critical making project, the *Sherlock Holmes* surveillance book succeeds within the content framework of "Reading Machines." But the project-based experience of critical thinking, making, and reflection has a better chance of getting used in other domains. Critical making projects encourage the metacognitive mindset and process cycle which can lead to high road transfer. Recall that low road transfer occurs at a relatively superficial level: see a physical computing kit, remember that you already know a bit about hardware and programming. Higher road transfer "depends on deliberate mindful abstraction of skill or knowledge from one context for application in another" [Perkins and Salomon 1988, 25]. That is harder to accomplish; some scholars are skeptical that local, context-specific knowledge can easily transfer at all [Anson 2016]. But student responses from these courses do suggest that many students recognized metacognition and the process cycle as transferrable outcomes of the course.[5] A student from meteorology concluded that "the most important result of this class was … how we can apply similar creative and reflective strategies outside of the context of this class, in our own fields." Another student directly linked the course projects with transfer: "I was given the liberty to do unique, non-conventional projects and connect various aspects of my learning even from other classes back to this class." That included disciplinary crossover, according to a student initially skeptical of the humanities: "[the course] challenged a lot of my views of the humanities as being 'boring.' It's a great class for both STEM and humanities students." Naturally, others resisted, unhappy with the lack of clear expectations for finished projects, and recalling those students Sommers and Saltz identified as skeptical of the paradigm of creative novicehood [Sommers and Saltz 2004, 137]. Yet, even among these students, at least one of my skeptics conceded that, while the course content seemed irrelevant, the structure still worked: "The course objectives are very unclear, and it is often difficult to understand what the 'point' of the course is. That being said, I really enjoyed the project-based learning style upon which this class focuses. I also found that the required project planning was a transferable skill that I utilized in other

courses."[6]

Ambience and Acculturation

22 Transfer is not just about skills or learning a project planning template to reuse in different contexts. It is also about cultivating the creativity and willingness to see yourself tackle new situations. In other words, transfer is a disposition and one that DH instruction may uniquely help to engender. I recently ran into a former student pursuing a degree in fashion and textile design. Based on her early exposure in our class, she had successfully applied for a position in the NCSU Libraries Makerspace. Notably, her final project for our class utilized fabrics and paper to adapt the involution of *Alice in Wonderland*, delving into the relations of text, textiles, and design. The Makerspace librarians were delighted by her application for the job, expanding the space's purview beyond the 3D printing projects and white-male demography which initially dominated it.[7] This student's return to the Makerspace as an expert, employed to guide her peers in all of its technologies, suggests another aspect of transfer which digital humanities instruction might facilitate. That is, the awareness of multiple spaces for knowledge creation on campus, and the enculturation to the different kinds of work and professionals who inhabit them.

23 How do you recognize yourself in new spaces? Especially if you don't see versions of yourself there, or really grasp what you'd be doing in them? Students entering college can get barraged by an endless orientation to campus services and communities. We mitigate students' orientation overload by making these different domains into sites of interaction. Put more directly: "You perceive the world largely through what you can do with it" [McCullough 2013, 27]. Digital humanities celebrates the active connections it makes across disciplines, to extra-disciplinary partners, to other spaces of praxis on campus and online. Digital humanities pedagogy, then, can be a kind of interaction design for the distributed landscape of higher education, helping students to realize what they can activate at different times in their career. According to Malcolm McCullough, we now exist in an "ambient commons" where attention does not necessarily have to mean constant focus. Rather than emphasizing individual mindfulness, McCullough highlights the thoughtful design of interactions, including how to manage all the things in our cognitive periphery: "everything you were aware of that didn't consume your attention, and that could be brought to the center of focus if necessary" [McCullough 2013, 15]. In a sense, digital humanities pedagogy is a layered strategy for the ambient commons of the university, in which multiple disciplinary pursuits, activities, and resource infrastructures (like the library) may be available to students but often remain peripheral to a focused academic trajectory. McCullough implicitly offers a model of transfer more nuanced than "just a domain problem." He emphasizes embodiment, situational awareness, and extended cognition which uses "the environment as an active resource" [McCullough 2013, 79, 70]. Writing and rhetoric researchers now also emphasize these conditions, using different terminology, but agreeing that transfer is an embodied and socially sophisticated phenomenon: "Adaptation and success require continued situated practice and gradual enculturation" [Anson 2016, 541]. Digital humanities instruction might offer just such a set of activity-based, situated practices in which students acculturate to the different environments of their learning.

24 For our course, pedagogy aimed at situated practice not simply with hands-on exercises involving our bodies, but in collaborating with different knowledge professionals in their own environments.[8] According to Nowviskie, Boggs, and Lundblad, such praxis helps students begin "to move with confidence across disciplinary and professional boundaries" and acculturate to those different environments [Nowviskie et al. 2015]. As transfer researcher Mary Goldschmidt argues, "when the individual can see himself or herself as a member of the new community of practice," they are far more likely to make consequential transitions across disciplines [Goldschmidt 2017, 127]. An intro to digital humanities framework can open many such opportunities for membership. While it does limit the depth of students' discourse knowledge in any one environment, it at least cultivates students' ambient awareness of resources, spaces, and skills they might at other times engage.[9] It also extends the course community to members beyond the enrolled students. We bring this community together at the very end of term, inviting everyone who supported the course to students' presentations. That session raises the stakes for students' projects, asks them to communicate to a broader community of practice than simply their instructor, and ennobles their work as of broadly interdisciplinary interest. Selected student projects are later exhibited at the entrance to the Makerspace, each with an explanatory card and credits, visible to all passersby for the next academic semester.

The substance of these projects gets to the interests of comparative textual media, critical making, and studies of reading. While I have some biases, those topics could improve any student's critical attention to attention. This paper has suggested that project-based, situated pedagogies for teaching those topics may be more vital to developing the transferrable skills in critical and creative thinking that so many FYE programs would promote. Digital humanities instruction may offer a unique context for that pedagogy, particularly as it encourages and honors collaborative praxis across disciplinary and professional settings. But as McGrail points out, "the real work is pedagogical" [McGrail 2016, 18]. And that includes, perhaps, more explicit attention within digital humanities pedagogy to metacognition and transfer. 25

Acknowledgments

My thanks to all the NC State first-year students in HON 202, HON 298, and HON 313 who cheerfully participated in this evolving course. Thanks also to the NCSU Libraries, especially Adam Rogers, Lauren Di Monte, Cindy Levine, Markus Wust, Eli Brown, Josh Boyer, Jamie Bradway, Robin Harper, Emily Schmidt, and Jason Evans Groth. The support of the NC State University Honors program has been vital, including Sue Carson, Aaron Stoller, Genia Sklute, Katy Leonard, Priscilla Lunsford, Corey White, and Anne Auten. I am perpetually in debt to the pedagogical inspiration of my DH peers, especially Kari Kraus, Brian Croxall, Mark Sample, Miriam Posner, Ryan Cordell, Joanna Swafford, and Roger Whitson. For a crash course in transfer studies, thank you to Chris Anson, Casie Fedukovitch, and Liane Robertson. Insufficiencies in this paper's discussions of transfer and metacognition are entirely my own. 26

Notes

[1] The instructors and resources mentioned in this paper represent just some of the generously shared models for teaching the past and future of reading, histories of text technologies, or design-based approaches to books and digital media. Digital pedagogy is greatly enhanced by an ethos of sharing and collaborative praxis [Sample 2011] [Nowviskie et al. 2015]; my own teaching is deeply indebted to the shared lessons of other teachers and their students.

[2] The syllabus, major assignments, planning documents, and milestones for the most recent iteration of the class — HON 313, "Reading Machines," Fall 2017 — are available via Humanities Commons at https://hcommons.org/deposits/item/hc:21393/.

[3] The risks are also similar, as some students do not easily adapt to this mindset, suspecting that assignments are secrets to decode, a game mastered only by the instructor, or irrelevant to their studies [Sommers and Saltz 2004, 137].

[4] A related model of "learning in the making in the context of arts education focuses on metarepresentational competence (MRC), the understanding of how tools support communicating an idea, when to invoke certain tools, and for what purpose" [Sheridan et al. 2014, 508].

[5] The TH!NK program has its own approaches to comparative and longitudinal assessment of students in these programs, which is ongoing.

[6] I have shared these comments and others from previous semesters with incoming classes, attempting, from the first day, to clarify our goals for interdisciplinary transfer as well as to perform my own monitoring and adjustment of its delivery [Moore 2017, 8]. Again inspired by Brian Croxall who creatively uses and publically shares his teaching evaluations. See http://www.briancroxall.net/teaching/ and [Croxall 2013].

[7] Kara Kennedy explores these implications more fully, arguing that "DH can also help women who potentially face gender biases related to digital technology gain competence and confidence with it through their humanities courses" [Kennedy 2017].

[8] For an interesting take on the pedagogical configurations specifically within makerspaces, see [Sheridan et al. 2014].

[9] Though I have focused on first-year students, Nowviskie, Boggs, and Lindblad emphasize how, through praxis, "students learn to negotiate more fluidly and at earlier stages between practices of classroom spaces and those of the working world" [Nowviskie et al. 2015].

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