

DESIGN SPRINTS AND DIRECT EXPERIMENTATION: DIGITAL HUMANITIES + MUSIC PEDAGOGY AT A SMALL LIBERAL ARTS COLLEGE

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“I’d love to dive deeper in the relationship between music and digital humanities,” is what Emma Solloway, a second year music composition student at the New College of Florida expressed to Mark Dancigers, professor of music and digital media, and Cal Murgu, digital humanities librarian, in late fall 2019. At the New College of Florida, a small liberal arts institution in Sarasota, January is dedicated to independent study projects (ISP), month-long investigations of a specific question or problem under the supervision of faculty. The ISP term, as we call it, enables students to focus their attention on one particular topic; for Solloway, that topic was the intersection of digital methods in the humanities and music composition. While ISPs are generally sponsored by one faculty member, the topic lent itself perfectly for a co-sponsorship. The question for us, Solloway’s faculty, was immediately one of design. How might such a collaborative exploration unfold?

The product of the one month-long exploration of digital humanities and music composition was *Mapping Sentiments through Music* (MStM), a web app built using HTML, CSS (Bootstrap), and several JavaScript libraries, including Leaflet, Chart.js, and buzz.¹ The application is, at first glance, relatively straightforward; however, as the user explores the site, additional layers of technical and musical decisions are revealed that complicate matters significantly. As the mouse hovers over polygons representing buildings on the map of New College, music begins to fade in; as the user hovers away, music fades out. Each piece of music, all original compositions by Solloway, corresponds to an average surveyed sentiment or emotion associated with a building or location on campus,

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1. The final project may be explored at <http://dss.ncf.edu/class/ISP/musicdh/>.

varying from “very positive” to “neutral” to “very negative.” A user’s click on any particular polygon reveals calculated values and charts. Solloway derived these sentiments by analyzing dozens of qualitative responses to a community survey using sentiment analysis techniques (specifically, a Python library called textBlob).² MStM turned out to be a surprisingly multivalent application. As a participatory public art project, the app combines participant answers to a qualitative survey with a musician’s original composition to tell a story about a particular place. As a project in translating data into sound, the app renders statistical information on sentiment as interpretively rich and subjective music. As an exercise in data collection and abstraction, the project is further influenced by the methodological opportunities and pitfalls of natural language processing techniques. The nuances of the project render it a brilliant example of what scholarly experimentation and disciplinary partnerships can help to facilitate. For Murgu and Dancigers, as well as the readers of this journal, this exercise is also an example of how lucrative collaborations between librarians and faculty can be in the classroom.

In their contributions to *Making Things and Drawing Boundaries: Experiments in the Digital Humanities*, Stan Ruecker and Jennifer Roberts-Smith make the compelling case that the humanities can offer “a new kind of experience design that is fundamentally different in its goals from experience design in industry.”³ Contrasted with commercial experience design where consistency and branding are key, the humanities can leverage the value of unique perspective to facilitate an almost unlimited number of experiences. The humanities, they write, “should thus encourage immediate, medium, and long-term responses from, for instance, someone attending a cultural venue or event.”⁴ In what follows, we take up Ruecker and Roberts-Smith’s call by showing that the MStM application, by virtue of its design, facilitates a subjective response from each user, while also offering a model for creative interactions using data. Ruecker and Roberts-Smith’s focus on “experience design” complements the work of others in Sayers’s volume, such as Aaron Knochel and Amy Papaalias’s chapter titled “Place-Based Learning and Co-Design Paradigms.” Knochel and Papaalias argue that a “place-based approach to education particular to art and design” can “activate interaction design, qualitative research methods, and community asset mapping to

2. Steven Loria, “TextBlob: Simplified Text Processing, Release 0.15.2,” accessed 21 November 2020, <https://textblob.readthedocs.io/en/dev/>.

3. Stan Ruecker and Jennifer Roberts-Smith, “Experience Design for the Humanities: Activating Multiple Interpretations,” in *Making Things and Drawing Boundaries*, ed. Jentery Sayers (Minneapolis: University of Minnesota Press, 2017), 259.

4. Ruecker and Roberts-Smith, 259.

intersect humanities inquiry with making practices.”⁵ Building on this notion of a place-based approach to educational experiences, we want to show how the MStM project used our local campus community as a vehicle for a “placeable curriculum.” Beyond disciplinary content, these chapters point to an interesting yet subtle shift in the (digital) humanities curriculum: a necessary borrowing of creative and pedagogical practices from the field of interaction design. MStM is a case study for humanities interaction design in practice. As our initial questions revolved around the design of the collaboration, elements of design pedagogy itself offered helpful solutions along the route towards a completed and meaningful experience.

In crafting MStM, we were also influenced by recent scholarship in sonification (discussed in the section, “Design Thinking and Translating Data into Sound”) and on pedagogy and sonic interaction design. We quickly realized that designing a curriculum for the intersection of digital humanities and music requires careful consideration of the technical complexity involved in both approaches. As Davide Rocchesso, Stefania Serafin, and Michal Rinott write in *Sonic Interaction Design*, “the complexity of the systems of sensors, actuators, and control logic that are necessary for exploiting [interactive artifacts of the future] poses tremendous challenges for designers who are mostly used to visual thinking and discrete interactions.”⁶ In addition to the technical complexity, music is aural, continuous, immersive, and emotional. Music fills a space, and so can be unwieldy to organize *in* a space. It elicits an emotional response, and so enriches an interactive process with affect. To help resolve these challenges, the authors point to four discrete skills which designers may initially lack, and that educators should emphasize as they create curricular projects: “*Means* to present them to others; *Language* to discuss them with others; *Skill set* to prototype them; *Processes* to iterate them.” We argue that these very same skill sets are important to consider when attempting to develop curriculum at the intersection of music and digital humanities. We will show how our use of a design-sprint methodology, an approach popular in industry but not in higher-education, introduced these aspects of design practice, ultimately leading to a fully functional prototype in under a month.

5. Aaron Knochel and Amy Papaelias, “Placeable: A Social Practice for Place-Based Learning and Co-Design Paradigms,” in *Making Things and Drawing Boundaries*, ed. Jentery Sayers (Minneapolis: University of Minnesota Press, 2017), 289.

6. Davide Rocchesso, Stefania Serafin, and Michal Rinott, “Pedagogical Approaches and Methods,” in *Sonic Interaction Design*, ed. Karmen Franinović and Stefania Serafin (Cambridge, MA: MIT Press, 2013), 125.

This project drew on particulars of the New College academic program and on the interests and expertise of those involved. While a similarly collaborative project might develop very differently under other institutional circumstances, we can offer some remarks on the ways in which design thinking can assist and support such projects shared between librarians, faculty, and students. For those of us whose work centers on music, we will also highlight some striking overlaps between teaching design and music, centering the notion of “direct experimentation” as a common ground.

NEW COLLEGE OF FLORIDA IN THE US HIGHER-EDUCATION LANDSCAPE

Founded in 1960, the New College of Florida is a public four-year baccalaureate liberal arts college that prioritizes pedagogical experimentation and supports student research inquiry. It's our brand. In the music program, both experimentation and experimental music have thrived and are considered essential. In courses, students are encouraged to not only perform, compose, and study, but also to critically listen, observe, play, and connect their study of music across disciplines. Recent course initiatives have emphasized bringing together aspects of making music with historical, ecological, and psychological approaches. A recent course, “Music and the Environment,” has students develop soundscape production skills while simultaneously immersing them in the ecological musicology literature. Another course, “Music, Gesture, Emotion,” teaches students to build their own gesture-controlled electronic instruments while reading in embodied music cognition. The concert series New Music New College, established in 1999, regularly features new and experimental musicians from around the country together with performances by students and faculty. Electronic music courses are a popular first experience in the music area. In recent years, increasing interest from faculty and administrators in digital humanities methodologies engendered the Jane Bancroft Cook library to hire a faculty librarian (Murgu) to support these growing interests. Since 2018, the library has supported digital scholarship in the humanities and social sciences, including faculty research projects and instructional activities.

The New College of Florida academic program is unique in that it offers students incredible flexibility in determining their own program of study. Students can pair together programs of study in disciplines that are similar (Philosophy and History), dissimilar (English and Computer Science), or a completely unique area of concentration that “is not on the books.” To encourage self-directed student inquiry, the academic program allows students to propose tutorials—full- or half-credit courses

on a specific subject—enabling them to access material that is not being offered as a regular course under the sponsorship of a faculty member. ISPs accomplish a similar objective, though the study period is limited to the intersession period (January). Finally, the New College of Florida does not use numerical grades to assess student performance; instead, assessment is completed using narrative evaluations. It is in this spirit of pedagogical experimentation and individualized intellectual pursuit that *Mapping Sentiments through Music* came to be.

MUSIC AND THE DIGITAL HUMANITIES: A BRIEF REVIEW

As Michelle Urberg makes clear, musicians were among the first to adopt digital methods to support their experimentation and scholarship.⁷ Similar to disciplines such as History and English Literature, a significant amount of musicologists' work over the past decades has focused on using or, in some cases, adventuring to create accessible digital archives and repositories.⁸ Journals such as *Notes* and the *Music Reference Services Quarterly* have done much to bring attention to these important projects in music information retrieval.⁹ One recent example includes Music Scholarship Online (MuSO), an effort to develop a federated search interface for music scholarship, including digital projects and collections. Additional examples include the Music Festivals Database,¹⁰ a “fully searchable, relational database of performance venues, personnel, and repertoire at British musical festivals held between 1695 and 1940,” and the Listening Experience Database, the first attempt to “collate and interrogate a mass of historical personal experiences of listening to music.”¹¹

More recently, scholarship published in journals such as *Frontiers in Digital Humanities: Digital Musicology* reflects a turn towards alternative methods. Recent publications feature work on machine learning, datafication of music, and sonification of data, as well as data-oriented approaches evident in other humanistic disciplines. This area of inquiry combines music composition and theory, human-centered computing, natural language processing, and machine learning techniques to create applications and algorithmic models. These novel approaches can grab

7. Michelle Urberg, “Pasts and Futures of Digital Humanities in Musicology: Moving Towards a ‘Bigger Tent,’” *Music Reference Services Quarterly* 20, no. 3-4 (2017):134–50.

8. See, for example, the comprehensive list of tools and initiatives in the appendix of Urberg's article.

9. For instance, see Charles Edward McGuire, “Of Programs and Prima Donnas: Investigating British Music with the Musical Festivals Database,” *Notes* 73, no. 3 (2017): 432–72.

10. McGuire, 432–72.

11. Simon Brown, Helen Barlow, Alessandro Adamou, and Mathieu d'Aquin, “The Listening Experience Database Project: Collating the Responses of the ‘Ordinary Listener’ to Prompt New Insights into Musical Experience,” *International Journal of the Humanities: Annual Review* 13, no. 1 (2015): 17–32.

student interest. One of Solloway's inspirations for pursuing a project that collided digital humanities and music was an encounter with the work of artist Luke DuBois, whose data-driven visual art and music composition engages such techniques.¹²

A further melding of digital approaches is evident in the increasing prevalence of data visualization in presentations of music research. A survey of data-oriented approaches to music research by R. Khulusi et al., for instance, reveals that visualization is an increasingly important component. This is likely a result of visuals' ability to "assist musicologists and non-expert users in data analysis and in gaining new knowledge."¹³ In MStM, we sought to visualize sentiment data on a map to offer our users a new way of experiencing the campus community and our shared geography.

While digital humanities work in general is considered by some scholars as somewhat of a gilded coin,¹⁴ the impact of the digital humanities on scholarship in the humanities is clear. However, as Stephen Brier argued almost a decade ago, "this recent rush toward the technological new has tended to focus too narrowly . . . on the academic research and publication aspects of the digital humanities, in the process . . . minimizing and often obscuring the larger implications of DH for how we teach . . . [and] how we prepare the next generation of . . . students for careers inside and outside of the academy."¹⁵ Brett Hirsch echoes a similar sentiment, as he warns that "we should be just as concerned about the pervasiveness with which pedagogy is excluded from discussions of digital humanities entirely . . . [P]edagogy should not be parenthetical to the experience of higher education."¹⁶ As a result, we have yet to seriously consider the best practices involved in teaching students how to learn and succeed in these experimental intersections. For example, how are we tackling the issue of computation and scale? This is true in general of digital humanities, as well as specifically in digital musicology. As Laurent Pugin argued some years ago in his article "The Challenge of Data in Digital Musicology," the general turn to technology mediated research in the humanities has "radically changed how we can access

12. For a sense of DuBois's work, see <http://lucedubois.com/>.

13. R. Khulusi, J. Kusnick, C. Meinecke, C. Gillmann, J. Focht, and S. Jänicke, "A Survey on Visualizations for Musical Data," *Computer Graphics Forum* (2020): 1–29.

14. Perhaps the most controversial and vociferous critique of digital humanities methods as of late is found in Nan Z. Da, "The Computational Case against Computational Literary Studies," *Critical Inquiry* 45, no. 3 (2019): 601–39.

15. Stephen Brier, "Where's the Pedagogy? The Role of Teaching and Learning in the Digital Humanities," in *Debates in the Digital Humanities*, ed. Matthew Gold (Minneapolis: University of Minnesota Press, 2012).

16. Brett D. Hirsch, "</Parentheses>: Digital Humanities and the Place of Pedagogy," in *Digital Humanities Pedagogy: Practices, Principles and Politics* (Cambridge, UK: Open Book Publishers, 2012), 5.

data, but also how we can make research results accessible to others . . . the scope of projects can be broadened to a completely new extent.”¹⁷ For us, this scope is indicated in the turn towards creating art through a participatory survey and making the results broadly public. Pugin also points to an increase in both the access and scale of musicology sources. All of this new research is indeed exciting; however, it is often predicated on having particular computational skills not traditionally taught in humanities classrooms. As Pugin writes, “In the emerging field of digital humanities, huge gaps exist in our knowledge and capabilities, and we can see digital musicology projects as an opportunity to widen and bridge research fields.”¹⁸ For us, these opportunities were quite concrete: how could the team member who knew how to build a digital map share that expertise with others? What type of sonification process would be appropriate to data about sentiment? Which of us could design a qualitative survey instrument? And what might be good ways of answering such questions?

MUSIC, NEW MEDIA, AND DESIGN THINKING

To answer such questions, let us begin with another: What do we mean when we promote design thinking¹⁹ as a pedagogical approach to digital music projects? And, how does design thinking help situate the four skills required for sonic interaction design? MStM involves several different levels of design: the design of the application’s user experience using HTML, CSS, and JavaScript; the design of the algorithm to determine sentiment levels using Python; the design of the qualitative survey instrument for data collection; and the design of the original compositions that represent the survey data, just to name a few. By elevating design thinking as a pedagogical learning outcome, we sought to encourage problem solving in an environment where information was incomplete, which required making creative and intuitive “guesses” in the process of problem solving. While encouraging “creative and intuitive guessing” is not an orthodox pedagogical approach in most humanities classrooms, the field of design has embraced this approach. Building on C. S. Peirce’s work on abduction, which Peirce introduced as a type of non-deductive inference, Kees Dorst differentiates further between two

17. Laurent Pugin, “The Challenge of Data in Digital Musicology,” *Frontiers in Digital Humanities* 2 (2015): 2.

18. Pugin, 2.

19. For a recent systematic review of how design thinking is applied by scholars, see Pietro Micheli, Sarah J.S. Wilner, Sabeen Hussain Bhatti, Matteo Mura, and Michael B. Beverland, “Doing Design Thinking: Conceptual Review, Synthesis, and Research Agenda,” *Journal of Product Innovation Management* 36, no. 2 (2019): 124–48.

forms of abductive reasoning: abduction-1 and abduction-2. Abduction-1 follows the conventions of formal problem solving, where we “know both the value we wish to create, and the ‘how,’ yet we must define and create a ‘what’ to serve as a solution.”²⁰ Abduction-2, on the other hand, represents a situation where we are only familiar with what we want to achieve. According to Dorst, “the challenge in abduction-2 is to figure out ‘what’ to create, while there is no known or chosen ‘working principle’ that we can trust to lead to the aspired value.”²¹ In other words, the second form of abduction asks an individual to create both the *what* and the *how* to reach a desired value or output. To do so, Dorst expands on the key practice of framing: applying a certain working principle with which a problem can be tackled. A simple IF/THEN statement helps to explain this practice: “IF we look at the problem situation from this viewpoint, and adopt the working principle associated with that position, THEN we will create the value we are striving for.”²² For Dorst, designers have sharpened “the art of iterative framing and reframing as a strategy for generating promising possibilities for addressing . . . problems.”²³ While he goes on to suggest that framing is an important aspect of what design has to offer the business and management sectors, we believe that it also has an important impact on the way that we approach teaching with new media.

Let us turn to MStM as a concrete example of how design thinking may work in practice. As Dorst argues, the dual process of creating a *thing* (object, service, system, or class project) and figuring out the way that *thing* works is the core challenge of design reasoning. One logical approach to this problem is to work backwards from the only known value: in the case of the MStM project, we knew that the student was interested in fusing music composition and sentiment analysis, a popular technique in the digital humanities. Following an assessment of options, based largely on an inventory of what we already knew and what we needed to learn more about, we settled on a frame that combined natural language processing and geographical mapping to determine how computational practices interface with the highly subjective practice of composition. Dorst opines that after “a credible, promising or at least possibly interesting frame is proposed, the designer can move to Abduction-1, designing a ‘thing’” that will meet the requirements of

20. Kees Dorst, “The Core of ‘Design Thinking’ and its Application,” *Design Studies* 32, no. 6 (2011): 524.

21. Dorst, 524.

22. Dorst, 525.

23. Susan Stewart, “Interpreting Design Thinking,” *Design Studies* 32, no. 6 (2011): 518.

the problem at hand.²⁴ For the MStM project, this stage of development included a significant amount of iteration, while staying within the chosen frame. The final step involves “reasoning forward” by using deduction to see if the *thing* and the frame combined actually achieve the desired value. In the case of MStM, we tested whether the application achieved the desired result of complicating the relationship between *objective* computation and *subjective* composition. As Dorst notes, “Until this test, the frame-as-proposed is just that: a possible way forward, that cannot be accepted as ‘definitive’ until the whole equation has been filled in by the creation of the design, and that design has been shown to lead to the aspired value.”²⁵ Dorst’s abstractions provide us with a helpful (albeit complex) vocabulary with which to explain the process of design reasoning.

While the applicability of abduction in the context of humanities pedagogy may not seem immediately clear, Burdick and Willis, in their paper “Digital Learning, Digital Scholarship and Design Thinking,” underscore the value of design methods when teaching with and about new media. Specifically, Burdick and Willis point to the interpretive, rhetorical, and performative nature of production in both design and new media contexts, as well as the importance of the user and designing interactions. Burdick and Willis, too, describe this process as abductive reasoning, a “form of reasoning that many of us use on a daily basis when we encounter a world that rarely supplies all the information we need.” Specifically, “abduction is a form of reasoning that can function best by making something, reflecting on what’s been made, and iterating.”²⁶ This model of making, reflecting, and iterating as “a form of [abductive] reasoning” links with the idea of “direct experimentation” that we will develop below, and is an approach held in common between design and music. As Burdick and Willis argue, “design thinking that is situated, interpretive, and user-oriented is well suited to [teaching with new media].”²⁷ Considering that the humanities represent disciplines largely concerned with teaching students how to make and communicate meaning, it is not a great leap to suggest that humanists should consider elements of design when experimenting with new media pedagogy. Furthermore, teaching students to take on and succeed in collaborative and interdisciplinary interaction design projects can require a reprioritization of learning outcomes. It also requires laying bare the myth of independent

24. Dorst, “The Core of ‘Design Thinking,’” 525.

25. Dorst, 525.

26. Anne Burdick and Holly Willis, “Digital Learning, Digital Scholarship and Design Thinking,” *Design Studies* 32 (2011): 549.

27. Burdick and Willis, 546.

scholarship and emphasizing the importance of communication and shared expertise in building digital projects. We now elaborate on design thinking and specifically on Rocchesso, Serafin, and Rinott's set of four skills necessary for designers to be able to create effective sonic interaction projects.

“Means to Present Them to Others”

Assembling the component parts of a sonic interaction often requires collecting expertise that is beyond the range of a single individual. While a composer may be able to present musical audio files, composed music may only be a starting point for an interaction. This dynamic plays out in numerous types of work. For example, in video game development, composed music is a content asset that serves many purposes. Showing others how a player might interact with this music requires collaboration across a team.²⁸ Anyone tasked with presenting an interaction as a whole will need familiarity with the component parts. In MStM, Solloway would be the one to ultimately present the interaction. While Solloway was already adept at presenting her music from other courses in electronic composition, she needed to gain familiarity with new software and key concepts in experience design in order to present the project to others.

“Language to Discuss Them with Others”

Although data is a shared language in digital work, applications and implications of data are extraordinarily numerous. When applications touch on humanistic work, they acquire the characteristic complexity, nuance, and messiness of the human realm. Describing how data might be applied and creatively incorporated into an artistic project takes not only familiarity with terms but also experience in descriptive discussion. A subject matter expert in sonification, the practice of translating data into sound, may not have any familiarity with the terms of sentiment analysis or natural language processing—practices that, like sonification, bring humanistic and digital approaches together. Both practices rely on data. But a shared digital language does not automatically enable collaborators to understand each other. Indeed, this was the case in our project. Terms needed to be clarified, and their implications sufficiently understood to enable a discussion to move forward. Design pedagogy emphasizes such descriptive exchange, and this exchange requires shared language. Consider the question, “How quickly should audio fade in and out as the mouse hovers over different buildings on the map?”

28. Karen Collins, *Game Sound* (Cambridge, MA: MIT Press, 2008), 88.

Is this a question for a composer, a web designer, a human computer interaction specialist, an accessibility specialist, or some other expert? Ultimately, it is the province of all involved in the design development, and can be effectively solved by descriptive exchange, allowing for emergent meanings and direct experimentation with elements of the project. By the end of the process, the team had questioned every step and the significance of every choice.

“Skill Set to Prototype Them”

This project drew on skills that span a wide range of disciplines—music composition, data sonification and visualization, natural language processing, survey design, and interactive web design, to name a few. When no disciplinarily defined skill or set of skills is sufficient to create a working prototype, the first task is to inventory all the necessary expertise by imagining the project in terms that are as precise as possible. A team can call on acts of interactive imagination and share them descriptively to move towards a first realization of a project. In Dorst’s words, this is identifying “framing principles.” While sharpening the imagination might not be a traditionally defined career skill, humanities teaching informs and relies on this inherent creative faculty. To create a new application in which data visualization, sonification, and user interaction would mingle, our team first had to come to a shared vision, and even a rough aural “image,” of what a user would experience. Aural, visual, and experiential imagination were component “skills” that fed our ultimate interactive experience and helped us draw some boundaries around the skill sets on which we would rely. Once the map and user experience had been sufficiently imagined and discussed, our prototype efforts drew on the skills of each member. The imaginative process was the necessary first step towards determining the scope of this collaborative skill set. We then set about the tasks of teaching and sharing skills in the dialogic and collaborative manner described above.

“Processes to Iterate Them”

The compressed time frame of our project did not allow for the creation of many iterations. At the completion of the project, we were able to generate questions that would guide the process of hypothetical future iterations. For instance, did users find that the interactive experience gave them new perspectives on the campus community? Did Solloway’s original composition match a user’s expectation of a sonified emotion? Was the sentiment data represented visually and aurally in an effective way? When did the smooth functioning of the app break down?

Could the music represent finer grains of sentimental nuance? Did users want to talk about the map after interacting with it? How long did users want to remain in the interactive environment? The process of generating such questions, seeking answers, and making new decisions based on those answers would inform future iterations of the work.

METHODS TO ENCOURAGE DESIGN THINKING

There are many ways to promote the four skill sets described above, to be sure. However, the ISP sponsored by Murgu and Dancigers shared many similarities with what technical disciplines, particularly engineering and computer science, refer to as a “design sprint.” As Thomas and Strickfaden explain, a design sprint has become a “methodology that is used under the umbrella of human-centered design by several design schools and many companies (e.g., IDEO and Google Ventures) as a ‘time boxed exercise’ that rapidly focuses product innovation.”²⁹ As a methodology or approach, it involves using a variety of methods including brainstorming techniques, sketching, team work, and prototyping. Over the course of several days, teams made up of experts in different areas quickly learn about the many dimensions of a successful project by developing project goals, assessing and remixing similar projects in the process of sketching new ideas, considering principles such as accessibility and user experience, creating and testing prototypes, and iterating based on user feedback and assessment.

The value of design sprints is clear in industry where a premium is placed on agile product development, but design sprints also have a place in educational settings. As Thomas and Strickfaden argue, design sprints are useful because they introduce students to “the design process quickly and to working in teams that emulate professional practice.”³⁰ In educational settings, teachers seek to prepare students for team oriented projects that mimic parameters of “the real world”; the design sprint process and method recreates many of those circumstances while placing an emphasis on creative problem solving and abductive reasoning. Design sprints require learning processes that contrast fundamentally from the instruction of a lecture or seminar.³¹ In stark contrast to the former, design sprints are explicitly about producing *something*. David Berry et al. put forward a similar suggestion as they show the relevance of the data sprint method for digital humanities inquiry, in the process

29. Joyce Thomas and Megan Strickfaden, “From Industrial Design Education to Practice: Creating Discipline through Design Sprints,” *International Conference on Applied Human Factors and Ergonomics* 790 (2018), 111.

30. Thomas and Strickfaden, 112.

31. Thomas and Strickfaden, 113.

making a case for “explor[ing] the field of digital humanities (DH) through the production of particular outputs of knowledge rather than the tools that are used.”³² While we do not want to steer too closely to the ongoing debate about whether “making” needs to be a constitutive element of digital humanities scholarship, we want to be clear that MStM was a sprint centered on learning through the production of a sonic interaction.

The concept of a design sprint works well to describe the faculty-librarian digital humanities collaboration that we describe here for several reasons. First, while the MStM project was fundamentally student-driven, it was predicated on idea-sharing and brainstorming between three team members, all engaged and motivated to see the project through in the allotted period of time. The team approach to this project was evident in many areas, including identifying objectives and goals; choosing and subsequently dismissing methodologies and tools; brainstorming innovative ideas and assessing their value; and, seeking additional information about particular problems and sharing individual expertise. In this way, the design sprint approach is different from conventional student projects, where faculty sponsors are involved as experts or mentors rather than as active participants and contributors.

Second, as faculty sponsors, Dancigers and Murgu were actively engaged in the process of development, offering direct expertise where available or committing time to learn about unfamiliar areas. Both faculty sponsors were also involved in identifying the “framing principles” of the project, to borrow from Dorst’s model of abductive design, which relied on their prior work in electronic music and web development, respectively. Dancigers, for instance, offered expertise on digital media and composition; Murgu offered expertise in natural language processing and web development; and Solloway actualized the project by combining shared expertise, composing original music and writing code, and ensured that project timelines were being followed. Along the way, each team member developed what we refer to as “shared literacies”: an ability to communicate and understand the value of each other’s perspective and area of expertise. Our notion of shared literacies speaks to the direct question (and challenge) of language identified by Rocchesso, Serafin, and Rinott in sonic interaction design. While it is difficult to prescribe a process which will lead to an “optimal” amount of shared literacy within a project team, the design sprint orientation encourages members to use

32. David Berry, Erika Borra, Anne Helmond, Jean-Christophe Plantin, and Jill Walker Rettberg, “The Data Sprint Approach: Exploring the Field of Digital Humanities through Amazon’s Application Programming Interface,” *DHQ: Digital Humanities Quarterly*, 9, no. 4 (2015).

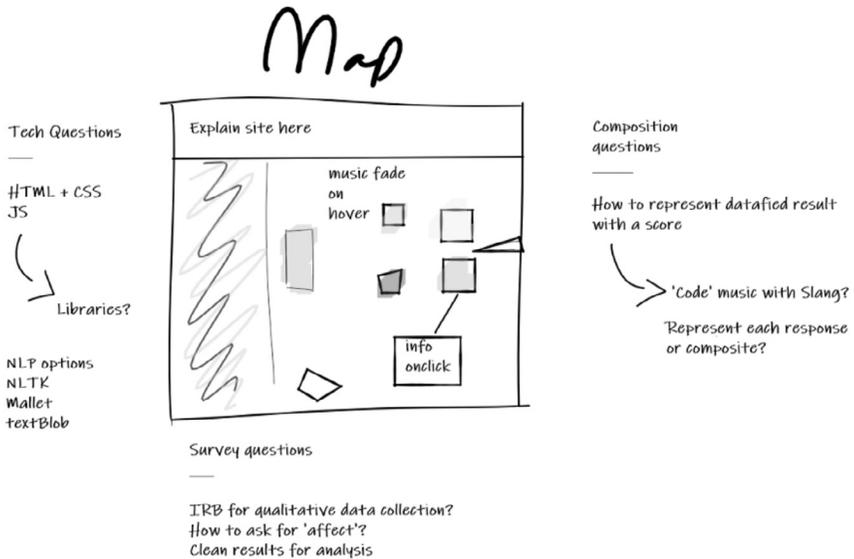


Figure 1. An example of a brainstorming session towards the beginning of the design process.

descriptive exchanges to increase understanding between technical and philosophical perspectives and areas of expertise. Our use of “shared literacies” also mirrors Rick Szostak’s notion that interdisciplinarians “creat[e] common ground” in order to succeed.³³ Whether we refer to it as a “common ground” or “shared literacies,” communicating expertise and design ideas requires an array of strategies that go beyond the use of language. Particularly true in the context of humanistic experience design, words are often not sufficient to describe a complex technique, computational methodology, or emotion. To this end, the team relied on simplified language to describe disciplinary expertise, making sure to scaffold concepts along the way. Moreover, the team relied on visual representations and mockups to describe ideas, as evidenced in Figure 1. And, perhaps unsurprisingly, sonic concepts were demonstrated rather than described. In this way, the design sprint method engendered an environment that did not reflect the traditional hierarchical faculty-to-student pedagogical relationship; instead, the method promoted a team

33. Rick Szostak, “How and Why to Teach Interdisciplinary Research Practice,” *Journal of Research Practice* 3, no. 2 (2007): 17.

approach which placed a premium on shared responsibility, mutual understanding, and bilateral growth.

The design sprint methodology offered students and faculty sponsors an opportunity to cultivate and apply design thinking in their work with new media and technology. Returning to Dorst's notion of abductive reasoning, the design sprint provided a framework within which our team could begin to imagine and create despite not having all of the answers or expertise. The approach necessitates problem solving, design thinking, collaboration, and shared literacy development over expertise. In this way, the design sprint methodology provides a vehicle to promote Rocchesso, Serafin, and Rinott's four fundamental skills required for sonic interaction design.

DESIGN THINKING AND TRANSLATING DATA INTO SOUND

MStM, albeit a student research project, did not begin with a standard research question. Instead, it began with a student's area of interest. A useful feature of design pedagogy is that it has a developed methodology for projects that may not seek to "nail down a precise scientific question."³⁴ As Rocchesso, Serafin, and Rinott note, "that a question of this kind arises as a crucial element in the design process is the exception rather than the rule."³⁵ Writings on sonic interaction design emphasize direct experimentation, descriptive methods, interaction and intersubjectivity, and emergent meanings.³⁶ MStM creates an interactive sonic environment, and the development and evaluation of this work included users' direct experimentation with the site. Descriptive methods could develop a detailed picture of such user experiences, and these descriptions could be shared—communicated—between users. Meaning (any implications for further interactions, understandings of sentiment, inspirations, refinements, and so on) would emerge from the users' interactions with the site and with other users' experiences shared in this way.

It is not necessarily intuitive to develop a translation of data into sound in such a manner. Because MStM involves an element of translation of one type of information to another, it intersects with the field known as "sonification," the aural analog of data visualization. Sonification has been defined as "the transformation of data relations into perceived relations in an acoustic signal for the purposes of facilitating communication or interpretation."³⁷ The goals of sonification range from the scientific to

34. Rocchesso, Serafin, and Rinott, "Pedagogical Approaches and Methods," 127.

35. Rocchesso, Serafin, and Rinott, 127.

36. Rocchesso, Serafin, and Rinott, 127.

37. Bruce N. Walker and Michael A. Nees, "Theory of Sonification," in *The Sonification Handbook*, ed. Thomas Hermann, Andy Hunt, and John G. Neuhoff (Bielefeld, Germany: COST, 2011), 9.

the artistic. On the scientific end, sonification might be used to improve the quality of medical imaging by translating data into sound prior to translation into image.³⁸ On the artistic end, real-time sensor data might be collected from the movements of a dancer and translated into musical sound.³⁹ By design, MStM oscillates between these two polarities, at once applying an algorithm to render sonified data while encouraging its composer, Solloway, and its audience to make meaning of its sights and sounds. MStM offers very little in the way of prescriptions as to how users should be interpreting media. It is here where Ruecker and Roberts-Smith's notion of designing humanistic experiences becomes evident: by virtue of design, MStM enables an almost limitless number of sonic experiences.

The invitation to open-ended exploration in our project shares some features with interdisciplinary sonifications created by Alberto de Campo, Christian Dayé, Christopher Frauenberger, Katharina Vogt, Annette Wallisch, and Gerhard Eckel via a working group at the University of Graz.⁴⁰ This is particularly true of the group's sonifications which employ mapping and geography. Discussing a sonification of election results in distinct regions of the state of Styria in Austria, the authors remark:

This sonification is interactive in the sense that it can be played like a musical instrument. Clicking the mouse anywhere in the window initiates a circular wave that spreads in two-dimensional space. The propagation of this wave is shown on the window by a red circle. When reaching a data point, this point begins to sound in a way that reflects its data properties. In our case, these data properties are the election results within each community. The researcher can select particular parties to listen to, and the percentage the respective party received at the election is represented by the tone's pitch. Further, the researcher can choose a direction in which to look.⁴¹

The authors also note that developing a "common language for collaboration"⁴² is a primary challenge in this interdisciplinary context. This observation intersects with our notion of shared literacies as a

38. Veturia Chiroiu, Ligia Munteanu, Rodica Ioan, Ciprian Dragne, and Luciana Majercsik, "Using the Sonification for Hardly Detectable Details in Medical Images," *Scientific Reports* 9 (2019).

39. Jan C. Schacher, "Motion to Gesture to Sound: Mapping for Interactive Dance," *New Interfaces for Musical Expression* (2010): 250–55.

40. The numerous research projects of this group are documented in Alberto de Campo, Christopher Frauenberger, Katharina Vogt, Annette Wallisch, and Christian Dayé, "Sonification as an Interdisciplinary Working Process," *Proceedings of the 12th International Conference on Auditory Display, London* (2006), 28–35, and in Alberto de Campo, "Toward a Data Sonification Design Space Map," *Proceedings of the 13th International Conference on Auditory Display*, (2007), 1–6.

41. De Campo et al., "Sonification as an Interdisciplinary Working Process," 31.

42. De Campo et al., 28.

key component of an effective design process. In later work with the “Science by Ear” group at the University at Graz, another finding was that “the informational value of the [sonic] rendering is often unknown beforehand, particularly in data exploration.”⁴³ This idea also intersects with our emphasis on direct experimentation as a means of evaluating such projects. Finally, de Campo et al. have done important research that situates sonification work within a particular design process, a project that is inspiring for future thinking in these areas.

A unifying theme of this interdisciplinary work is that sonification is a method for exploring data within a target domain of expertise, and that this method can aspire to be useful to experts in that target domain. In the example described above, the sonification is designed to aid experts in sociology or political science explore a data set of interest. Sonification can also be used to broadly share insights that might normally require expertise. In another working group example, Visda Goudarzi created a “workshop in which sonification experts, domain experts, and programmers worked together to better understand and solve problems collaboratively” in order to help all in the group “complete some data exploration tasks” on climate data.⁴⁴

With MStM, our key departure from this model is that our primary goal was interaction with the site, rather than the determination of a research question within an expert domain. Perhaps a sociologist could become an expert in our target domain, which was sentiments about places on campus. But in another important sense, there could not truly be experts in this domain, only numerous subjectivities. We sought to establish an interactive experience that allowed the users’ subjectivity to intersect with that of the composer, the designers, and the sentiments of survey respondents. The goal was to make something that is sufficiently interesting to interact with. In order to more clearly draw this distinction between our goals and those of more established sonification methods, it is worth pausing on descriptions of scientific and artistic sonification practices, and situating design thinking as a possible bridge between the two.

Thomas Hermann writes that sonification is “the data-dependent generation of sound, if the transformation is systematic, objective, and reproducible.”⁴⁵ The terms “systematic, objective, and reproducible” point towards a framing of sonification within scientific inquiry. Elsewhere in *The Sonification Handbook*, Till Bovermann writes, “Aesthetic

43. De Campo, “Toward a Data Sonification Design Space Map,” 1.

44. Visda Goudarzi, “Exploration of Sonification Design Process through an Interdisciplinary Workshop,” *ACM ICPS: AM '16 Proceedings of the Audio Mostly*, (2016), 147.

45. Walker and Nees, “Theory of Sonification,” 9.

intentions can be a source of problems. If one designs sonifications to be more ‘music-like,’ by quantizing pitches to a tempered scale and rhythms to a regular grid, one loses essential details, and introduces potentially mis-leading artifacts.”⁴⁶ Such a scientific framing of sonification raises interesting questions. In what sense can a sonification be considered “objective”? For example, should changes in daily temperature be mapped onto changes in pitches? Or would they be better suited to loudness? Or perhaps stereo position in a pair of speakers? These questions are complicated further if we account for cultural interpretation: a sound in Western music, such as a major chord, that is associated with happiness and optimism may not be interpreted in the same way in a different culture. Centering design thinking puts these questions in the student’s domain, and seeks to embrace, rather than minimize, aesthetic entanglements.

In the “objective and reproducible” view of sonification, the process becomes an interdisciplinary tool in data exploration and analysis. In contrast to that perspective, sound artist and composer Kristina Wolfe has written that sonifications invite listeners towards a kind of mystical understanding of data, an understanding that negates analytical understanding and places sonification squarely within artistic practice. In an evocative phrase, Wolfe writes, “information is not being created, but conjured. The sonification of data reveals shadows, not facts.”⁴⁷ As attractive as Wolfe’s call to revel in the shadows of data may be, it leaves open questions about whether any useful data analysis may emerge from sonifications (as some case studies have shown). Is it possible to move beyond a dualism of scientific data analysis on the one hand and artistic expression on the other? After all, an allure of interdisciplinary practice is that we may address multiple sides of an issue at once.

Design pedagogy offers a possible solution. Although a particular sonification may not be suited to address a scientific question, that does not mean that evaluation of the sonification is impossible, nor that it has nothing to say from a scientific perspective. Design pedagogy encourages descriptive exchange and the creation of emergent rather than explicitly delimited meanings. This exchange and meaning creation might be thought of as “direct experimentation,” where the experiences of the creators and users are allowed to meld to extract richness and implication from the experience of a design. The meaning is to be found in the interaction itself.

46. Till Bovermann, Julian Rohrerhuber, and Alberto de Campo, “Laboratory Methods for Experimental Sonification,” in *The Sonification Handbook*, ed. Thomas Hermann, Andy Hunt, and John G. Neuhoff (Bielefeld, Germany: COST, 2011), 240.

47. Kristina Wolfe, “Sonification and the Mysticism of Negation,” *Organized Sound* 19, no.3 (2014): 305.

How does the Library make you feel?

25 responses



Figure 2. Examples of the type of qualitative responses generated by the survey.

Returning to the MStM project, Solloway’s music for each location-sentiment on the New College campus was in some ways objective, and in others highly subjective and artistic. Solloway distributed a questionnaire to the student community asking for comments about their feelings towards campus locations (see Figure 2). These locations included the library, the campus bayfront, arts buildings, student dorms, the academic center, and others. The survey was designed in a way that urged the responses to be as subjective and personal as possible—no standardized answers or Likert scales. Subjects were asked to explain how each location made them feel and given no restrictions. Solloway used sentiment analysis—a natural language processing technique where text data is interpreted and classified into sentiment categories—to generate a numerical representation for each location. Places with similar scores were “scored” with the same music. This was what could be considered the “objective” part of the project.⁴⁸

48. We recognize that natural language processing and sentiment analysis present methodological issues. These issues were front and center as we tried to convert qualitative information into quantitative data. One such discussion included the algorithm’s lack of understanding of context in assigning sentiment values to strings. One particular example illustrates this perfectly: Many of the comments about the Center for Wellness and Counseling were generally positive; to be sure, the CWC is an important office on our campus that supports many of our students with health related challenges. However, we found that comments such as, “They helped me very much during an episode of depression” were associated with a negative sentiment because “depression” outweighed any other word. This example offered an opportunity to discuss how algorithms require careful tuning.

Yet Solloway's renderings of what positive and negative sentiments *sounded like* involved numerous interpretive choices. Negativity was mapped onto dissonance and sounds with "darker" timbres. Positive sentiment was expressed with upbeat and melodic music, employing "brighter" electronic sounds. In addition, Solloway conjured negativity using more of a soundscape, abstract design approach, while positivity was more of what someone may typically think of as a "song" or "tune" in the Western music world. Shades in between these poles were explored. While there is some evidence that basic responses to music with these characteristics may be widely shared, and so were rendered objectively, Solloway still exercised considerable freedom in the particulars of her music.⁴⁹ Beyond the choices that were made, it is important to consider choices that were considered but not acted upon. For instance, how different would MStM be if Solloway had written an algorithm that automatically composed music based on average sentiments? What if Solloway had included haptic responses on the mobile application that were associated with the strength of the sentiment? How would such choices—about instrumentation, layering, tempo, tone, key, and so on—be understood or evaluated? These are questions of design.

THE DESIGN PROJECT AND THE MUSICAL PROJECT

As we have already noted, an answer to such questions lies in direct experimentation—that is, the experience of the site itself and interaction with it. We have established that design thinking centers such direct experiences and calls for them throughout the process of project creation. This design model shares some important similarities with what Marc Leman has called the "pragmatic" model of musical interaction.⁵⁰ Because Leman's work is intent on describing a wide variety of musical experiences—playing music alone or with others, listening to music, dancing to music, exercising to music—we can investigate Leman's model with an eye towards applying aspects of a design situation to a musical situation. We mention Leman's work to draw on terrain that music librarians and educators traverse every day, that is, situations involving interaction with music specifically.

Leman's language on meaning formation in musical interaction bears a striking resemblance to descriptions of design processes. Leman begins by pointing out problems with a "semantic" model of musical interaction, in which music communicates a message in a way that is similar to

49. For a discussion of some common features of energizing or relaxing music, see Marc Leman, *The Expressive Moment* (Cambridge, MA: MIT University Press, 2016), 174.

50. Leman, 20.

language. Leman asks what exactly the message of music might be. He also points out that, for example, sad music may cause feelings of happiness in a listener, which points to a more complex relationship than one of music simply delivering a message—the listener who responds with happiness to sad music clearly interacts unpredictably with the “message.” Leman also notes that while language allows for reasonably accurate acts of translation, a musical expression cannot be so easily recast.⁵¹ In contrast to this semantic model, Leman proposes a pragmatic model in which the meaning of a musical interaction is drawn directly from the interaction itself. Crucially, this kind of meaning can happen as a rapid response, rather than as a semantic and thoughtful reflection. Leman proposes “that the reflective conceptualization isn’t needed during the interaction. It is too time consuming, and it is detrimental to the rapid responses that are needed. Expressive interaction with music indeed relies on immediate responses, on quick thinking, and on expressive flavors that span a wide range of human communicative abilities.”⁵²

Those who teach and research music know the value of the rapid responses and interactive immersion Leman describes. Whether in music ensemble courses, studio lessons, musicology, or electronic music courses, we know that meaning can emerge from the interaction with music itself, from feelings that subtly shift with repeated hearings or rehearsal, from eye movements and breathing shared between musicians, from something as fundamental as clapping to a beat or joining a chorus in harmony. Leman writes, “meaning here is defined as the emergent outcome of an active involvement with music. Meaning draws upon activities that generate homeostasis through synchronization and alignment of movements with sounds, through music playing, through relaxation exercises, or in other ways, including aesthetic attitudes that take place in listening contexts such as concert halls. This type of meaning is pragmatic.”⁵³ We could add classrooms, and libraries, to the listening contexts that Leman names. If we adopt Leman’s pragmatic model of musical interaction, the design pedagogies we have described above are already embedded in our work as music faculty, librarians, and students. Being explicit about the emergence of meaning from interaction in both the musical and design context allows us to articulate a value of musical work and imagine how music specialists might bring their expertise into a design-oriented space.

51. Leman, 19.

52. Leman, 21.

53. Leman, 21.

REMARKS ON FACULTY-LIBRARIAN COLLABORATIONS

We end this piece with a few remarks on our experience as faculty-librarian-student collaborators. While we have taken care to avoid prescriptions, we hope that elements of this paper will be useful as our readers plan future collaborations centered on digital humanities and music pedagogy.

First, we acknowledge that the New College of Florida is a unique place, both in its organizational structure and its academic flexibility. Implementing a design sprint methodology for a music/digital humanities student project may be more difficult and perhaps impractical at a larger institution where large class sizes render this approach unsustainable. However, we encourage readers, particularly those at smaller liberal arts institutions, to consider opening the door for this kind of faculty-librarian collaboration by initiating a conversation with the other party focused on developing curriculum centered on experience design in the humanities. Specifically, we encourage faculty interested in redesigning aspects of their curriculum to reach out to librarians to discuss sustainable options for instructional design. Thinking of librarians as partners in the curriculum design process rather than as simply an option for academic support after the fact opens the door for extremely fruitful collaborations both in research as well as innovative pedagogy.

Second, we encourage faculty-librarian teams to try to include additional partners whenever possible. While our collaboration included a digital humanities librarian and a professor of music and digital media, we would have benefited from the subject specific knowledge of a music librarian, for instance. The design sprint methodology places a premium on shared expertise and team-oriented problem solving. A music librarian would have offered invaluable skills and creative solutions to some of our challenges, regarding music information retrieval, for example. Ultimately, we encourage faculty and librarians to consider including additional colleagues in their pedagogical collaborations.

Third, it would be rather odd to extol the values of design thinking and iteration while not practicing iterative curriculum development ourselves. The design sprint that led to the MStM project was the first pedagogical collaboration between Murgu and Dancigers. This essay represents months of thought and reflection on what worked and what did not work, all with an eye towards the next opportunity for us to apply this methodology in the classroom. Through the process of writing this essay, we had the opportunity to pin down, articulate, and rethink how design sprints may serve a role as a pedagogical approach in the (digital) humanities classroom. As we look forward to the next iteration of

our design sprint pedagogy, one major consideration includes the sustainability and lifecycle of projects that are derived from design sprints, like the MStM application. In general, more attention has been devoted recently to the question of sustainability in digital humanities. Recent scholarship by Vinopal and McCormick, as well as Kretzschmar and Potter, highlight the importance of university libraries' responsibility to promote sustainable and scalable development.⁵⁴ While these conversations often focus on infrastructure for faculty research, they also apply to pedagogical collaborations between faculty and librarians. Consider, for instance, if our design sprints consisted of several different teams, all requiring unique stacks, server space, and sunseting policies. We acknowledge that these questions of scale will likely limit the applicability of the design sprint for our colleagues at larger institutions; however, it is possible to create limited parameters with which to engender the type of design pedagogy we describe above while not exhausting human and technical resources.

Fourth, the inherent messiness of experience design and the pedagogical approach described herein is a feature, not a fault. The complexities described above make offering prescriptive, step-by-step instructions or lesson plans difficult to write and share. Nevertheless, we offer the following guiding principles.

- There are no universal parameters for design sprints, which is why you should create specific parameters for your classes. Clearly delineate the length of the design exercise as well as the expected output and learning outcomes.
- Place emphasis on the design components rather than the execution of the knowledge output. While improving on technical competencies required for digital humanities and sonic interaction design is a welcomed result, the experience of identifying a desired value, developing a framing principle based on research, ideating through possible solutions, and prototyping the most likely candidate is in and of itself the learning experience.
- Librarians and faculty should embrace and take seriously the opportunity to contribute as a member of a team. The dynamic between student and faculty during the MStM project was a unique one. We were able to work in a way that abandoned traditional hierarchical relationships between faculty and students, allowing discourse to flow more easily, and all ideas to be

54. Jennifer Vinopal and Monica McCormick, "Supporting Digital Scholarship in Research Libraries: Scalability and Sustainability," *Journal of Library Administration* 53 (2013): 27–42; William A. Kretzschmar Jr. and William Gray Potter, "Library Collaboration with Large Digital Humanities Projects," *Literary and Linguistic Computing* 25, no. 4 (2010): 439–45.

evaluated with the same degree of professionalism. Promoting a work environment where the student can feel that their contributions are equally important was particularly motivating for Solloway. This is something that is often overlooked in academia, as it is natural for the project participants to assume roles such as leader and follower. For MStM, each participant filled a role with equal responsibilities. From a student perspective, this was something Solloway had never experienced in academia. The dynamic felt comfortable and encouraged Solloway to treat the project beyond something for academic evaluation. Most importantly, MStM felt to Solloway like an experience that could be useful beyond the parameters of a course.

CONCLUSION

In this essay, we have offered a case study for how a digital humanities librarian and a professor of music and digital media at the New College of Florida borrowed elements of design thinking to teach at the intersections of their disciplines. We found teaching at this disciplinary nexus complex for several reasons, including the wide breadth of approaches available in both digital scholarship and sonic interaction design. However, this very same complexity makes this a ripe arena to promote abductive reasoning and creative problem solving. Applying the design sprint method allowed us to convey all the constitutive elements that are involved in the development of digital humanities projects in general, and sonic interactions specifically. The design sprint also promoted a horizontal pedagogical hierarchy that saw all members of the group as equal partners, rather than the traditional faculty-as-expert paradigm. In the process, we emphasized four general skills over any one area of expertise:

- *Means* to present them to others;
- *Language* to discuss them with others;
- *Skill set* to prototype them;
- *Processes* to iterate them.⁵⁵

The output of this pedagogical experiment was the MStM project, a web application that is at once an exercise in sonification of data as well as a public, participatory art project. The project also serves as a possible answer to Ruecker and Roberts-Smith's call for a new type of humanities experience design, which stands in stark contrast to (and perhaps as an antidote for) commercial experience design. The question being, how

55. Rocchesso, Serafin, and Rinott, "Pedagogical Approaches and Methods," 125.

do we teach experience design in the humanities? Indeed, one possible avenue for this type of experience design is to embrace a “placeable curriculum,” which Aaron Knochel and Amy Papaelias offer as a strategy to “activate interaction design, qualitative research methods, and community asset mapping to intersect humanities inquiry with making practices.”⁵⁶ Our pedagogical approach was possible due to the New College of Florida’s academic program, one that encourages student driven research inquiry and unique approaches to pedagogy, including faculty-librarian collaborations in the classroom. Despite the specific circumstances that enabled this experiment to flourish, we hope that this case study will inform future collaborations at other small liberal arts colleges between librarians and music faculty and point out useful overlaps between design and music pedagogy.

ABSTRACT

In this essay, we detail the pedagogical collaboration between a digital humanities librarian, a professor of music and digital media, and a second-year music student that took the form of a design sprint. The product of the design sprint was the *Mapping Sentiments through Music* (MStM) application. Using this project as a case study, we argue that both digital humanities and music education share a commonality: both disciplines can incorporate elements of design thinking to be successful. As a result, our efforts center direct experimentation with a team, and foster design thinking by promoting descriptive exchange, creative problem solving, and the creation of emergent rather than explicitly delimited meanings. We conclude with several remarks on overlaps between music and design pedagogy, and on librarian-faculty collaborations.

56. Knochel and Papaelias, “Placeable: A Social Practice for Place-Based Learning and Co-Design Paradigms,” 289.

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