Creating Space: Building Digital Games

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Studies of games, rhetoric, and pedagogy are increasingly common in our field, and indeed seem to grow each year. Nonetheless, composing and designing digital games, either as a mode of scholarship or as a classroom assignment, has not seen an equal groundswell. This selection first provides a brief overview of the existing scholarship in gaming and pedagogy, much of which currently focuses either on games as texts to analyze or as pedagogical models. While these approaches are certainly valuable, I advocate for an increased focus on game design and creation as valuable act of composition. Such a focus engages students and scholars in a deeply multimodal practice that incorporates critical design and computational thinking. I close with suggestions on tools for new and intrepid designers.

At this point it is perhaps cliché to comment on the growing interest in gaming in composition studies. Journals *Computers and Composition* and *Computers and Composition Online* each ran a special issue nearly ten years ago on games and writing (2008), and *Currents in Electronic Literacy* ran a similarly-themed issue in 2010. Jonathan Alexander's "Gaming, Student Literacies, and the Composition Classroom: Some Possibilities for Transformation" was published in *College Composition and Communication* in 2009 (pp. 35–63). At the 2017 Conference on College Composition and Communication, sixteen panels included at least one presentation on gaming, and many were full panels on either gaming pedagogies or critical analysis of games. *C's the Day*, now the official game of the conference, ran for the seventh time at this meeting of the conference. While we may not be past the work/play dichotomy Albert Rouzie highlighted in 2005's *At Play in the Fields of Writing: A Serio-ludic Rhetoric,* conversations about the value and role of games in rhetoric and composition classrooms are lively and regular.

However, despite this demonstrated interest in games as both sites of analysis and as pedagogical models, relatively few people in our field actually make or have their students make games. Compared to the attention and support multimodal composition has received, including a textbook by Kristin Arola, Jennifer Sheppard, and Cheryl Ball (*Writer/Designer*, 2014) and numerous pedagogical texts on implementation (Lutkewitte, 2013; Selfe, 2007; Wysocki, 2004), composition-focused texts on game development are virtually non-existent. Many of the examples that do exist are focused on paper prototyping or board and card games. Indeed, Douglas Eyman and Andrea Davis' 2016 collection *Play/Write: Digital Rhetoric, Writing Games* contained eighteen essays on the topic of games and rhetoric/pedagogy but only one on having composition students create digital games (an additional article discusses the pedagogical value of having computer science students code games in introductory courses). This observation about the lack of digital games creation is not meant to undercut the importance of design activities that involve physical games. Indeed, these game artifacts are valuable as either a stepping stone to digital production or as a final product in and of themselves. Paper prototypes are an essential part of any game design plan, and board and card games are important media in the midst of a popular resurgence. Nonetheless, the relative dearth of materials on composing games seems remiss.

Thus, I present a call to action, an endorsement for the act of digital game design as composition pedagogy and as scholarship. Yasmin B. Kafai and Quinn Burke (2016) noted several benefits to what they call "constructive gaming", creating one's own game for pedagogical purposes,: students who make games "[demonstrate] significantly deeper engagement in their learning and strategy use, which [involves] system analysis, decision making, and troubleshooting" (p. 33). This article will explore some of these benefits, looking first at the existing literature in the field on games and learning before moving on to the ideas of constructive gaming and code literacy. Of course, one possible reason for our current lack of engagement is clear: game design tools are generally quite complicated and intimidating. Thus, this article will conclude with a brief overview of the existing tools intrepid instructors and students might explore with.

Games, Rhetoric, and Pedagogy

Constance Steinkuehler (2016), in her introduction to Kafai and Burke's (2016) treatise on game design for learning, summarized the impact of James Paul Gee's 2003 landmark title *What Video Games Have To Teach Us about Learning and Literacy* thusly: "it spawned a generation of research and development on educational and commercial games (and game communities) that capitalized on the capacity of the medium to engage learners in complex forms of thinking and problem solving" (as cited in Kafai and Burke, p. xi). As Steinkuehler implied, Gee's text has been taken up in a number of fields, and rhetoric and composition is no exception: Cynthia Selfe and Gail Hawisher's 2007 *Gaming Lives in the 21st Century* was inspired by Gee, and both journal special issues mentioned above highlighted Gee's text as one of the inspirational materials in the editor overviews.

Gee (2003) espoused a number of different ways he claims good games equal good learning (thirty-eight, to be exact). Gee's argument was not that games provide good content for learning, though of course certain games may, but rather that they model effective pedagogy: "video games are potentially particularly good places where people can learn to situate meanings through embodied experiences in a complex semiotic domain and meditate on the process" (p. 26). Many of these principles have been picked up and contextualized in terms of rhetoric and composition pedagogy.

There are, of course, a variety of ways games can be used in educational settings. Eric Klopfer, Scott Osterweil, and Katie Salen (2008) identified twelve different models in "Moving Learning Games Forward," including games as engines or authoring platforms, games as authoring systems, and games as technology gateways, to name a few. Max Lieberman's (2010) meta-analysis of existing literature on games and pedagogy in composition and rhetoric identified four distinct ways games are used in writing instruction. First, they may be used as a means to teach specific content and/or skills. David M. Sheridan and William Hart-Davidson's *Ink* (2008), Ryan M. Moller and Kim White's *Peer Factor* (2008), and Matt King's *Rhetorical Peaks* (2010) were all demonstrations of using games to teach composition-related skills. Second, games and gaming communities may be used as a text for close reading and rhetorical analysis. Richard Colby and Rebekah Shultz Colby (2008) and Matthew S. S. Johnson (2008) modeled this approach, using *World of Warcraft* as a site for rhetorical analysis. The third model moves from using physical games at all, and instead looks to gaming as an exemplar of effective pedagogical practice. Game design principles may be used as a framework for pedagogy, a method strongly advocated for by Jane McGonigal in *Reality is Broken* (2011) and implemented in the experimental combined middle and high school Quest to Learn. In rhetoric studies, Justin Hodgson (2013) used this approach in a games and rhetoric course, and Jill Morris (2016) used augmented reality games as pedagogical practice in her business writing courses. The last of Lieberman's categories, and the one I will focus intently on here, was having students design games using a number of tools in varying degrees of complexity to demonstrate their knowledge of multimodal writing and composition. While not particularly common, Danielle LaVaque-Manty (2013) wrote of supporting students in the creation of text-based adventure games using a variety of different simple development platforms, and James J. Brown and Eric Alexander (2016) required students in their advanced rhetorics class to create games in Scratch (a tool discussed in more detail below).

I highlight Lieberman's taxonomy here because it represents a clear and succinct way of thinking about the various methods and implications of a games-based pedagogy. Certainly these are not exclusive domains, nor is one more or less preferential than the others (though Kafai and Burke would almost certainly argue that instructivist perspectives, using games as instructional materials, are not as rich or engaging as constructivist perspectives, using games for creation and experimentation). Rebekah Shultz Colby (2017), in her survey of games-based pedagogies conducted with twenty-four writing instructors, identified seven pedagogical approaches to incorporating games into writing classrooms: "rhetorical analysis of games, composing games, games as theory, professional writing genres in gaming, games as research spaces, gaming as transfer, and gamification" (p. 60). Douglas Eyman (2008) used a four-part taxonomy to describe research in the field (including that which is not pedagogically-focused): writing about games, writing around games, writing in or through games, and writing games.

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From a Play-Based Pedagogy to a Maker-Based Pedagogy

Prior to addressing the value of game design for rhetoric and composition, it will be useful to turn momentarily to conversations about code literacy or, as Karl Stolley (2012) preferred, source literacy. Annette Vee (2013) argued for the increased importance of computational work and its study by literacy professionals, stating, "programing is not replacing writing, but is rather interlacing with it, augmenting it." Vee positioned code and computational understanding as a new technological literacy, one that, like all literacy technologies that precede it, has important implications for social power. Similarly, Alexandria Lockett (2012), while emphatically underscoring she is not a programmer, nonetheless explained the many ways computational literacy grants her agency as she acts and interacts with technology in profound ways. Vee and Lockett highlighted the increasing importance of basic computational literacy for both scholars and students. As our lives are increasingly surrounded by technological systems, it seems natural that a rudimentary knowledge, at a minimum, of what computational systems are and how they are governed by rules is an important part of being a literate member of society.

Karl Stolley (2012) expanded the call Vee and Lockett make, offering a vision for the future of Computers and Writing in which coding is central to the work of the field. In Stolley's vision, the field "places craft at the center of what we do. And what we do is digital production. We make things from raw digital materials: open-source computer languages and open formats. Which is to say, we write digital things. To write digital things, we rely on a strong command of source literacy." In these calls for an increased focus on the computational, the procedural, and the programmable, I find the seeds of my own call for an increased focus on game design, prototyping, and development as composition.

As Kafai and Burke (2016) noted, Gee's good learning principles from games don't just explain why they make engaging texts to learn from; these principles also demonstrate why games are challenging but rewarding texts to compose. Jody Shipka (2011) called for an expansive understanding of composition courses, one which focuses not simply on the creation of a final research project. Her expanded definition of a composition course is one in which "students leave their courses exhibiting a more nuanced awareness of the various choices they make, or even fail to make, throughout the process of producing a text and to carefully consider the effect those choices might have on others" (p. 85). While her call for increased attention to how compositionists define and situate the work of composition never explicitly refered to gaming, certainly game design activities can meet this definition. Indeed, Brown and Alexander's (2016) description of their use of game design in an advanced composition course demonstrated exactly that. Their students, having explored Ian Bogost's concept of procedural rhetoric and other theories of digital rhetoric and multimodality, designed and produced a persuasive game on a political topic. In doing so they accomplished the goals Shipka (2011) defined for composition: thinking critically about design choices (p. 21). Brown and Alexander (2016) argued game design is a rhetorical and compositional challenge that presents students with "inventional spaces—possibility spaces that encourage exploration and invention" (p. 275). Having their students create games gave the students the chance to compose with images, sounds, and text and also gave them the opportunity to model complex systems and think about those systems in a non-game environment.

This computational, or systems-based, thinking is an important part of how game design projects give students potential value above and beyond other types of multimodal composition activities. Game designer Tynan Sylvester (2013) described games as "engines of experience." Explaining what he means, Sylvester said, "I think of games as a special kind of machine. Machines are made of carefully designed metal shapes that fit together perfectly, whole games are made of carefully designed mechanics that fit together perfectly" (p. 44). Working on a game project, and particularly game projects like the ones Brown and Alexander encouraged their students to undertake, forces students to think about the systems they see all around them and translate those systems into game mechanics. Thus, game creation involves two important acts: critical analysis of real world situations and systems and thoughtful reframing of those existing systems into persuasive engines of experience that convey messages using procedural rhetoric.

Furthermore, as Danielle LaVaque-Manty (2013) discussed, coding proficiency is less essential than rhetorical knowledge for assigning, supporting, and assessing student-created game works. LaVaque-Manty argued that game design assignments are an opportunity to "acknowledge that our students have more experience in some realms than we do and invite them to develop skills we don't teach them alongside the skills that we do" (p. 115).

Tools of the Trade

Rebekah Shultz Colby (2017) identified a lack of resources as one of the primary challenges for any games-based pedagogy, and this challenge is certainly intensified when it comes to designing games (p. 58–59). Colby noted that her survey of WPA-L (Writing Program Administrators Listserv) revealed video games are the multimodal text least used for either analysis or production. In this section I hope to briefly address the lack of resources she identified and provide touchstones for interested instructors to build from. While this section will certainly go out of date with time, the tools below are well-established and used extensively. When applicable, I have referenced particular articles or chapters that model using the tool in question. These tools are further listed in order from least complex (Twine) to most complex (Unity).

Twine

Twine's homepage describes this tool as "an open-source tool for telling interactive, nonlinear stories" (Twine.com). The drag and drop interface allows users to create text-based adventure style stories with little or no HTML or CSS knowledge, making this tool an excellent choice for classes that do not have a strong technical component or instructors with little coding knowledge. Equally important to the ease of use, these texts are web-native artifacts that are easy to share online. While many contemporary students are likely to have little or no experience with interactive fiction as a genre, these texts are fairly simple to make and provide an excellent playground to explore various concepts related to composition and game design: interaction and interactivity, narrative and play, and challenge and reward, to name a few. In its self-description, Twine also highlights the scalability of its engine: "you can extend your stories with variables, conditional logic, images, CSS, and JavaScript when you're ready" (Twine.com). This ability
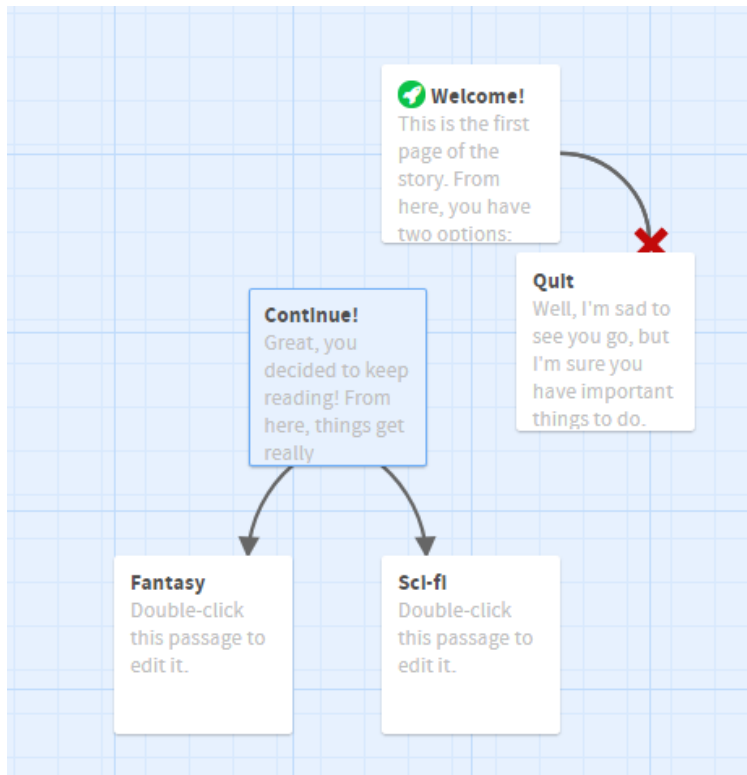
Figure 1: Sample starter story in Twine.

is an intriguing opening for pedagogical applications, as instructors and students can scale the complexity of their projects based on their existing code knowledge and their desire or commitment to extend that knowledge. All students will quickly and easily be able to create branching stories that allow them to explore concepts like procedural rhetoric, while students that take a particular interest in the assignment or students with a background in programming will be able to incorporate more complex story elements

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(character stats, an inventory system, and other game-like features). Thus, Twine allows students to develop their systems thinking through a consideration of rules or behavior without introducing complicated asset management or animation.

Anastasia Salter's (2015) "Learning through Making: Notes on Teaching Interactive Narrative" provided a model of using Twine in an upper division course focused on narratives in new media. Salter noted that, while the majority her students came to the classroom with extensive technical backgrounds, they often struggled with design, having difficulty recognizing the affordances of the media they work in. Throughout the course, Salter assigned a series of "creative miniprojects," including things like the translation of a personal experience into an interactive narrative and an interview with a famous character (pp. 2–3). These projects focus students' attention on the compositional goals of interactive narratives, including style, genre, and voice.

Scratch

Scratch is a game development environment with a high level coding language, meaning that it contains more elements of natural human language and is easier for beginning coders to pick up quickly and use. This tool is designed explicitly for educational purposes and targeted at children ages eight to sixteen but is appropriate for any beginner interested in diving into digital game design. Like Twine, Scratch is designed to accommodate a variety of skill levels and provide opportunities for growth and development. While the program can also be used to make text adventures, it shines as a simple engine to teach 2D game design and programming structures. Students are able to add basic animations, sound effects, and simple

Figure 2: Bascom Hill Defender, a game created in Scratch by a group of digital rhetoric undergraduate students.

logic statements to make their games interactive and visually compelling. Scratch has received substantial attention from the K–12 learning community and is used extensively in extra-curricular programs. At this point in time, Scratch is perhaps the most commonly used development engine for novice game designers and has both extensive documentation and a fair amount of research published outside the field of rhetoric and composition.

Brown and Alexander (2016) discussed their use of Scratch in an upper division digital rhetorics course in their chapter "Procedural Rhetoric, Proairesis, Game Design, and the Revaluing of Invention". Students read Bogost's *Persuasive Games* and then created their own game that used procedural rhetoric to make an argument about local and/or state politics in Wisconsin. The above game, *Bascom Hill Defender*, places players in the role of Native American tribes attempting to defend their land from Western expansion. The students describe their intention in a summary of their game, saying "players experience the frustration of lacking privilege in a system that claims to be an even playing field" (Berger et al, 2012). Brown linked to several final student games on his website, providing a model of what students can create with just one semester of instruction in both the tool and the affordances of game design.

Unity

Unity is a complete development environment and game engine. It is one of the top engines used by independent game developers and has even been used by major design studios including companies like Blizzard (makers of *World of Warcraft*) and Bethesda (makers of *The Elder Scrolls V: Skyrim* and *Fallout*
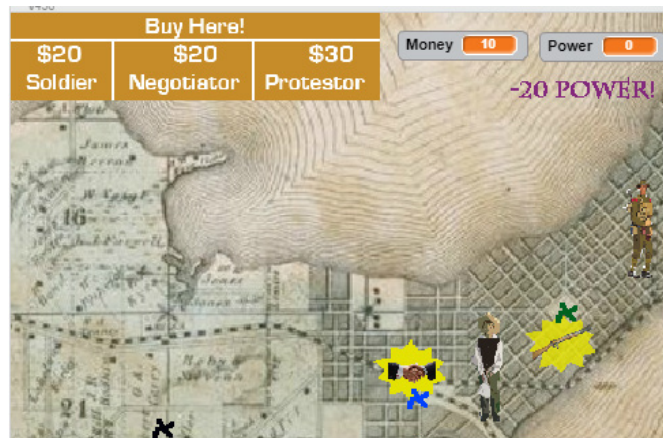
4) to make their immensely popular mobile games, *Hearthstone* and *Fallout: Shelter* respectively. While Scratch and Twine are both designed for those with limited coding experience, Unity is a complex game environment that requires a fair amount of time to learn and use effectively. While Unity is an extremely complex system, there is an extensive online support system with tutorial videos
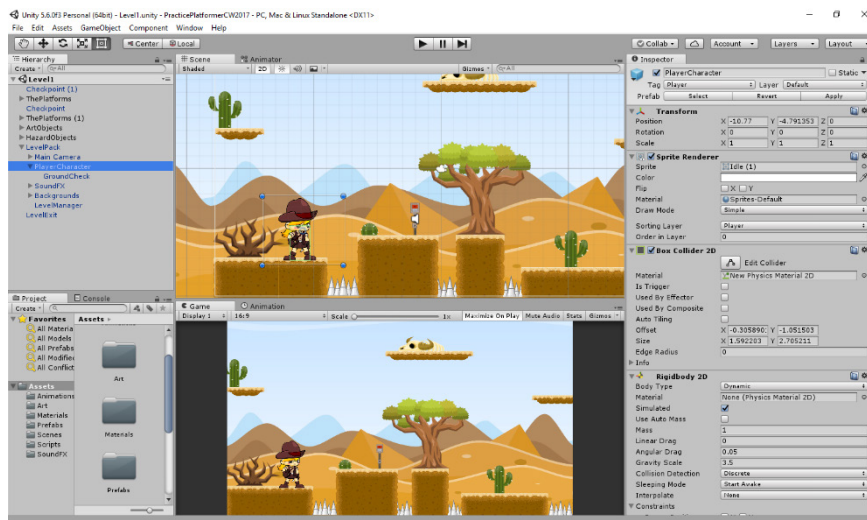

Figure 3: The editor screen of Unity, as demonstrated during Computers and Writing 2017.

and support to assist eager new designers. This option may not be appropriate for intro-level courses or courses not explicitly about game design or programming, but it is a powerful tool that gaming compositionists should at least be aware of. Unity is free to educational institutions and free to individuals who make less than $100,000 on any game using the engine (at which point developers must pay a one-time licensing fee). There are currently a number of game design textbooks that both instruct students in game design theory and have them enact this theory through the creation of simple games in Unity. There is also, as previously mentioned, a substantial amount of online tutorials and training tools and active online communities devoted to learning and improving the software. Nonetheless, there are currently no in-field discussions or examples of Unity.

In my 2017 workshop at Computers and Writing, I introduced the software, demonstrating the creation of a basic platformer in just six hours of workshop time. Certainly, six hours is a not inconsequential amount of class time for any course, and yet, for courses where topics including multimodal composition, game design, and/or procedural rhetoric are relevant, spending time to explore Unity can offer insight into design affordances that may be overlooked without such a focus. In the six-hour workshop, we explored box colliders, animation, camera angles, and movement scripting, looking at the various affordances and limitations of the design choices we were making. A brief example: to simplify the code we wrote for our camera, we locked it on the y-axis, meaning the camera was able to move left and right, but not up and down. This simple choice required some workshop participants to radically change their level design, as they initially included platforms that went above or below the camera space. We made similar choices throughout the workshop, as we considered whether or not to let the player double-jump, how fast to allow the player to move, and what kinds of obstacles to put before the player.

I doubt any of my workshop participants will leave the field to become game designers, just as I do not anticipate the use of the tools discussed above in rhetoric courses will necessarily propel any of our students into the field of game design. What I do firmly believe, as Kafai and Burke (2016) argued, is that even brief exposure to the creation of digital games will deepen students' understanding of systems thinking. Furthermore, when coupled with instruction in digital rhetoric, game design activities have the potential to make students both more critical and critically aware users of the digital systems that surround them.

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