Pedagogical Dramas and Transformational Play: Narratively-Rich Games for Learning

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Abstract. Although every era is met with the introduction of powerful technologies for entertainment and learning, videogames represent a new contribution binding the two and bearing the potential to create sustained engagement in a curricular drama where the player's knowledgeable actions shape an unfolding fiction within a designed world. While traditionally, stories involve an author, a performer, and an audience, much of the power of videogames as media for advancing narrative springs from their affordance for the player to occupy more than one role—and sometimes all three—simultaneously. In the narratively-rich videogames that we design, players have the opportunity to perform actions, experience consequences, and reflect on the underlying social values that these situations were designed to engage, affording a type of narrative transactivity. Elsewhere we have discussed designing these media as contexts for engaging academic content; here we illuminate the power of videogames to engage children in ideological struggles as they are experienced in game-based adaptations of classic literature. Toward this end, we present our theoretical argument for the power of games as a contemporary story medium, grounding this discussion in the context of two game design projects and their implementations. Implications are discussed in terms of the potential of immersive, interactive media—videogame technology, in short—for achieving wide-ranging educational ends.

Introduction

Advanced technologies are simultaneously expanding and shrinking the world in which we live. Digital television, the Internet, videogames, mobile phones, and ubiquitous computing are creating novel ways to play, to communicate, to learn, to tell stories, and to explore ideas, roles, and even identities. In particular, over the past decade, videogames have become a significant forum for the enculturation of youth and adults in many countries. While every era is met with the introduction of powerful technologies for entertainment and learning, we believe that videogames represent an especially powerful medium. By *videogame* we refer not to any particular game or genre or even to videogames per se but, rather, to the immersive, interactive media with such accompanying common practices as mediated representations of self and other, representational and textual visual content, narrative cohesion and progression, and so forth, all familiarly implemented in popular videogames. In our vision and, indeed, our research and design work, they can foster a state of engagement involving projection into a character role within in a partially fictional problem context, a context in which one must engage particular understandings and ideological commitments to make sense of and, ultimately, transform the context.

Through our research and design work, we have come to appreciate not only the challenge of engaging youth with such complex ideological dilemmas but also the efficacy with which experiential scaffolds can achieve such engagement (Barab, Dodge, Thomas, Jackson, & Tuzun, 2007). Moreover, we recognize the efficacy of videogames and specifically of narrative transactivity in promoting these ends. By *narrative transactivity* we mean a person–story coupling that, through affording agency, consequentiality, and accountability, scaffolds students in engaging with significant ideological dilemmas to help them engage and critique their understandings and biases. And we believe that videogame technologies represent an opportune means for engendering these experiences. The present work reflects a broadening of the range of educational challenges approached through the Quest Atlantis project (Barab, Thomas, Dodge, Squire, & Newell, 2004). Specifically, the foundation of the project entailed a deliberate pro-social agenda toward which our original designs were oriented (Barab, Thomas, Dodge, Carteaux, & Tuzun, 2005). As the project became more widely used in schools, our designs reflected a more systematic concern with academic achievement through aligning with standardized curricula and assessing student outcomes (e.g., Barab, Zuiker, et al., 2007). While all of those efforts continue, here we describe designs that are less objective in their content and evaluation and that, moreover, align with our pro-social concerns. For this, we turned to two classic novels, Shelley's *Frankenstein* (1831) and Rand's *The Fountainhead* (1943). Our challenge was to

develop contemporary stories that, while bearing ideological import and maintaining significant aspects of the originals, would afford a sense of agency, consequentiality, and accountability with the explicit goal of prompting players to engage and critique their biases with respect to the core ideological dilemmas that the stories were designed to illuminate.

On the one hand, the works that a culture regards as classics demonstrate an enduring value, embodied in the inexhaustible worlds of their stories. On the other hand, they demonstrate an unexpected novelty, inviting us to (re)discover something about ourselves and the implications of our biases each time we visit. They tell us something known forever, but never well enough remembered; something incompatible with the commonplace, but essential to its meaning; something shaped by audiences preceding us, and casting its shape, in turn, upon ourselves and the world we inhabit (Calvino, 1999). Further, however, our use of classics brings some transparency to the research and design work. By purposively selecting novels recognized as classics, we help to ensure that others can review the games and findings with at least some prior knowledge not merely of their narrative content but, moreover, of their ideological nature. Indeed, the pedagogical potential of the novels had been established in the socio-cultural conversations around them—conversations into which our work may figure, alongside adaptations by others, in such other media as films and graphic novels. For example, in developing our version of *Frankenstein,* we first examined Jackson and Yates' (1994) graphic novel and Whale's (1931) motion picture to understand some of the choices made concerning abridgement and modality. By adapting classics, we also make possible the opportunity for others to loosely replicate the research or, at least, consider variations and augmentations.

The notion that stories can serve to teach—between individuals, generations, and cultures—is unsurprising, even to those who privilege expository discourse in which content is presented in a more abstracted and explicit fashion. Stories do pedagogical work, namely by embedding content within a narrative frame and communicating it through character actions and dilemmas. Bruner (1992) discussed the potential of story as having "metaphoric loft" (pp. 25, 33): that is, whereas any particular narrative features a specific setting and characters, and portrays a unique dramatic complication and resolution, the message that it suggests will resonate with other situations, with other stories, and with audiences in other times and places. In leveraging videogames as a story medium, we find that the mechanisms by which narrative and narrative games achieve their effects are discernable and not dissimilar. For narrative, the potential to evoke experience is realized through balancing dramatic elements, and similarly, a game must balance the tensions inherent in the sense of play that it affords. To elaborate, for narrative games broadly, these include elements of setting, character, and action, and for narrative games

emphasizing interactivity, these include levels of difficulty and rule sets guiding decisions and outcomes. Further, a narrative must balance between detailing the particular setting, characters, and actions, and conveying the universal or archetypal message underlying these particulars. Similarly, for all games apart from the most trivial, and despite variations in particulars, they must, like narratives, convey a consistent underlying message and, as narrative media, use canonical narrative tropes. This, then, describes loosely the pattern by which we fashion our narrative games as educational media.

Videogames can effectively scaffold socially-significant insights, in large part due to the agentive nature of play, wherein the choices that a player makes, reflexively make apparent the player's claims about their character. A videogame can establish ideological dilemmas in which a player must determine a course of action, consider its implications, and address the established meanings that the dilemma serves to contest. Moreover, to the extent that a game achieves this function, it has engaged the player in at least one instantiation of the topic, one permutation of its essential factors. The substance of these curricula lies not in the knowledge they embody but the engagement they afford and the experiences they offer. Significantly, while arguably not unique to these media, the immersivity and interactivity they afford make salient the possibility and potential of story as a vehicle of social commitment, a way of making meaning and finding self. While traditionally, we think of stories as involving the distinct roles of an author, a performer, and an audience, a core argument advanced below is that, in part, what makes videogames so powerful as a medium for advancing narrative is that the player may occupy more than one role—and sometimes all three—simultaneously. In the way that both games and stories involve a elaboration and explication of a deep structure, that is, an underlying grammar or mechanics, games may be conceived of as stories enacted through player roles and rule sets (Salen & Zimmerman, 2004). Further, and again being the focus of this research, immersive interactive media can support engagement in narrative games with a sense of consequential role-play or dramatic agency (Murray, 1997).

In the narrative content, beyond the story being told, one may find further an ideological and even moral intent. The act of authorship involves embedding pedagogically-illuminating decision points designed to position the player such that they experience the effects of a particular choice in terms of its impact on the ensuing narrative. Still, a story too explicit in pedagogical intent risks waning didactic, like word problems fashioned to teach a concept in mathematics. Conversely, one too replete with detail and nuance risks harboring varieties of experience without fidelity to a message: even when considering an author's question, each member of the audience may answer widely differently. The story

represents an act of meaning in which the author's ideological intent coincides with an individual's subjective encounter. The challenge is how to embed the particular ideological dilemmas that the designer wishes the player to engage, within a context that both structures and is structured by the player. Elsewhere we have discussed designing videogame media as contexts for engagement with academic content, effecting outcomes evident locally as well as distally, that is, achieving understandings that represent themselves even on standardized measures (Barab, Zuiker, et al., 2007; Hickey, Ingram-Goble, & Jameson, 2009). Less commonly discussed, however, is the potential of videogame technology to foster an appreciation and facility with untraditional content—ambiguous, debatable, or polyvalent—and significantly, our agenda as educators includes fostering students' engagement in not only academic content but also timeless ideological questions.

To be specific, the first game world we present is based on Shelley's gothic *Frankenstein* (1831). In this adaptation, students engage selected aspects of the classic narrative, leveraged to problematize—and consequently clarify—each individual's stance on two related issues: the dilemma of valuing ends versus means, and the definition of what constitutes humanity. From there we discuss an adaptation of Rand's literary classic, *The Fountainhead* (1943). Children join and promote one of two architecture firms, according to their personal allegiance and again involving their struggle with a dilemma of values: personal integrity versus social conformity. Consistent with our argument thus far, both of these designs constitute play spaces wherein one experiences narrative transactivity. Below, through a review of the literature, we first theorize about the power of story and elaborate on its transformation in the 21st century in the form of videogames. Then we discuss each of the two pedagogical dramas in depth, first as they were designed, and then as they were implemented or realized through children's use. The designed adaptations represent a continuing and increasingly elaborate aspect of our larger Quest Atlantis project, a game-based virtual world being used by over 25,000 children worldwide for learning disciplinary content and, the focus of this paper, social commitments. Therefore, more than a theoretical argument, the ideas being advanced are grounded in the pedagogical dramas that we have developed and researched: curricular contexts designed to promote identity work as players transact with them to engage culturally-significant life lessons. Reflecting on lessons learned from these designs and on data gathered from their implementation, we conclude with a discussion of next steps and implications for education and society more generally.

Videogames as Affording Narrative Transactivity

Play and Self

In his study of hermeneutics, Gadamer (1989) explored the ontological nature of play as a means for understanding works of art. Play, like art, is less a thing than an experience: one that involves a player for its meaning to take shape, and one that takes hold of the player. Play invites us into an experience that *plays us*, affording particular actions and at the same time leaving us as one who has realized these opportunities in a particular way. In effect, in "spending oneself on the task of the game, one is playing oneself out" (Gadamer, 1989, p. 108). This playing oneself out is the essential connection to the self of the player: through the player's presentation of the play itself, the player's self is extended. The player is consumed in the seriousness of the play, irrespective of the concerns or critiques of those observing. This experience resembles that of flow (Csikszentmihalyi, 1990), in which the experience becomes so focused that the external world fades, leaving just the player with the experience. This does not, however, mean that the player is lost in some "twilight zone" of the game, becoming solely the subject of the play; they are instead an equal partner, continually caught up and released in a hermeneutic dance. Play refers not simply to an action that we do but to an activity that we become, stretching our sense of self such that, as Vygotsky (1978) noted, one is able to act "a head above oneself."

Discussing not only play but learning, and in the context of videogame media, Gee (2003) discussed two identities beyond our common, primary one: the in-game projective identity, and the hybrid player–character identity that is the merged self–game identity that comes to representation during play. This differs from Gadamer, who discussed the holistic transformation of the self through the presentation of play, not the calling into being of another. In these complementary perspectives on the phenomenology of play, Gadamer employs a metaphor of identity as physical growth, and Gee, identity as spatial context or location; the experiential outcome in either case is the creation of a new self. Consider the Wii game *Trauma Center*, for example: the player assumes the identity of young surgeon Derek Styles, who progressively works through increasingly tense and complex medical emergencies, some with global implications. Demonstrating advancement in the game, the player's skill and understanding improve as do the skills of the in-game character Derek, a coupling reinforced through dialogue and interactions with other characters in the hospital. Through this matching of skill between the player and Derek, emerges player–Derek, a hybrid identity that synthesizes the Derek instantiated in the deep structure of the game with the ever shifting and maturing natural-world player.

The decomposition of the self in Gee's language explicates three descriptive moments of play, illuminating the actions representative of the player, of the hybrid player–character, and of the character according to his own fictitious reality. We argue that these identities exist fundamentally as a continuity of the self and, in doing so, acknowledge the value of play as an opportunity for the player's self-transformation. In this way, games invite us to become more than we could be without them, extending our zone of proximal development and providing insights into ways of being and claims of identity not available *sans* game world. This occurs through the interactive rule sets and relational webs of the game, a causal lattice in which the player becomes protagonist who determines, through play choices enacted within the game structure, how the story will unfold, establishing a type of sheltered narrative. While the play choices do directly affect the in-game character, they are dually claims about the player since it was she who made the choice.

Interactive Fiction in Videogames

While interactive narrative initially was regarded as a text-parsing task using puzzles for content, digital technology opened new avenues for exploring embodiment through narrative, and as technology advanced, interactive fiction likewise grew from simple forms of hypertext to spaces wherein the user controls a character in the story. Indeed, in Murray's (1997) vision of the medium, the reader must become situationally engaged in the world of the story. Moreover, just as opportunities afforded by immersive, interactive media may contribute to the effectiveness of fiction, so may fiction contribute to the effectiveness of the media: Laurel (1991) and Heeter (2000) both advised that interactivity should have a narrative structure, and Hanssen, Jankowski, and Etienne (1996) asserted that multimedia must reach the generality of story to achieve its full potential. For instance, the success of the early computer game *Myst* derived in large part from its traditional narrative quality. Interactive narrative relies on the foundation established by Aristotle: the elements of a story—the setting, characters, and plot—must be weighed and balanced to evoke the experience intended by the author. In contemporary digital media, the story elements must further account for an active participant role: they must situate the reader unambiguously and invest her role with opportunities for action.

Theorists and practitioners of story and new media have long engaged in debate over the relationships between narrative and gameplay and between the narrative elements and player actions. Much of the debate rests on definitional issues, such as what constitutes interaction, and what is a proper balance of narrative and ludic elements. Many of the questions regarding interaction depend on what outcomes the actions afford the

player, especially toward establishing realistic plot and character development. Some critique the failure of games to support meaningful narrative, citing works in which an author has either overly structured the story movement or, with the goal of affording agency, underdetermined plot evolution. Crawford (2005) suggested that, while they require structure, plotlines can attain real interactivity through judiciously balancing character responses in relation to player choices, plot pacing, and types of contests creating the play. In designing games such as *The Sims*, for example, Wright explored partial interactivity—existing as a hybrid form between story and game—through life-like characterizations of human behavior matched to gibberish speech. Again, this represents an operational instance of a theoretical concern. Representing the position of narrativism in the debate, Murray (1997) characterized the combining of game and story as balancing plot, the cornerstone of story, with the kinds of actions afforded the player as the centerpiece of gameplay. Because both games and stories can have contests and puzzles, Murray argued that authors of interactive narrative should continue to explore the dance between the two to find a harmony. On the other side of the debate, some ludologists challenge the legitimacy of examining games as texts, portraying this as a case of academic imperialism (Aarseth, 2004; Frasca, 1999). As Eskelinen (2001) noted, neither story nor game is bound to particular media, and worse, narrativist analyses of many games seem forced and unnatural. This all serves to clarify what we propose: a theory around gaming integrally bound to narrative, not to justify gaming as a valid learning context but to leverage it as an inextricable part of the experience.

In harmoniously balancing story and game, matters of game structure and rules need to be explored to determine how they enable or impede the story form. Preoccupation with discerning the rule sets dictating gameplay may undermine one's engagement with the narrative such that, as with the criticism of schools as systems to be manipulated rather than narratives to be engaged, playing games may degrade into routines of decoding underlying grammars rather than journeys into narrative worlds (Salen & Zimmerman, 2004). We struggle to create a space for play and story that is neither so constrained that it eliminates the game, nor so open that it obliterates the story. Somewhere in the middle, one may find consequential role-play, or dramatic agency (Murray, 1997), which transpires when the game narrative responds expressively and coherently to the player's actions. By keeping these actions aligned to the story, the affordances of story and game are matched, and the story maintains its control while still providing space for the game, without resorting to narrative artificial intelligence. Even so, such a narrative game does not present a total solution because it does not allow for replayability with changing, unscripted narrative. Actions must at the very least create the illusion that the world is responsive to the player's choice, not merely in

the moment but also as a complete narrative; otherwise the game fails to support dramatic agency. In short, because it is a game, the player should experience a sense of agency and consequentiality as they transact with the narrative.

Transformational Play

Above, we argued that games can offer entire worlds in which learners are central, important participants, testing what impact their actions have on that world, which provides a safe place in which what one knows relates directly to what they able to do and, ultimately, who they become. Bound up in the choices that one makes and their impact on the game world, their play provides players insight into the value and meaning of particular ideas and into themselves as the kind of person who makes particular choices in relation to those ideas. For example, in a game about justification—ends versus means—designers can structure a narrative such that the player must eventually make a decision, determine her priority between the goals she pursues and the strategies or methods she employs to attain them. Significantly, even a binary branching point, with one privileging the goals and the other, the methods, can trigger in the designed space an evident and seemingly consequential change. Further, if the narrative world shows the impact of one's in-game choice, then by extension one may consider the contestation of priorities as they might be enacted in one's life beyond the game. More generally, we regard such games as a new tool for educators, one that can position *learners with intentionality*, *content with legitimacy*, and *contexts with consequentiality* (Barab, Gresalfi, & Arici, 2009).

Elsewhere we talk about this experiential space, in which one has intentionality, legitimacy, and consequentiality, as *transformational play,* something that may be supported by pedagogical dramas. Barab and colleagues stated that "playing transformationally involves taking on the role of a protagonist who must employ conceptual understandings to make sense of and, ultimately, make choices that have the potential to transform a problem-based fictional context" (Barab, Gresalfi, Dodge, & Ingram-Goble, in press). The idea of transformative play highlights three interconnected elements of *person*, *content*, and *context*, with an emphasis on designing spaces that integrate the three. The challenges is to create spaces experiences that (1) bind person with context by positioning players as change agents with intentionality as first-person protagonist in the storyline; (2) bind content with person by creating dilemmas that legitimize disciplinary content; and (3) bind context with content by highlighting the consequentiality of one's actions through contexts that change in response to students' decisions (see Figure 1).
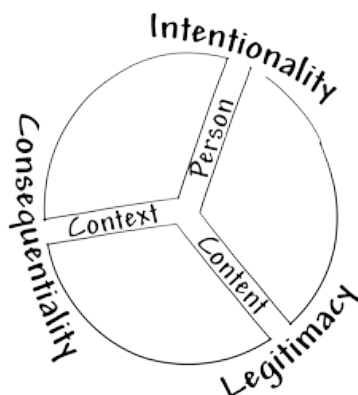
Figure 1. Elements of Transformational Play (person, content, and context) and the design affordances that bind them together.

As an example, a highly researched curricular drama designed to teach science content and used by thousands of children worldwide is the Taiga Virtual Park. The Taiga Virtual Park unit is an interactive narrative set within an aquatic habitat (the Taiga Park) where a serious ecological problem has resulted in many fish dying (Barab, Sadler, et al., 2007) (see Figure 2). In the unit, students use the arrow keys on their keyboard to navigate an avatar through a virtual park and interact with other players and game-based or non-player characters, who communicate their perspective on the problem. The Taiga unit connects content with context by supporting students' experience of the consequentiality of their actions. For instance, after students have interviewed various stakeholders and analyzed water quality data from different points along the virtual river to learn about potential causes of the fish demise in Taiga Park, they are asked to recommend a resolution to the issue. In making this decision, students must consider their conceptual tools (i.e., understanding eutrophication, erosion, and overfishing) to inform their decision (i.e., prohibit the indigenous people from farming upstream; prohibit the loggers from cutting trees in the park; close the game fishing company). In later designs (Barab, Zuiker, et al., 2007), to add a sense of experiential consequentiality, after making their recommendation, students travel 20 years forward (in game time) and witness the results of their recommendations.
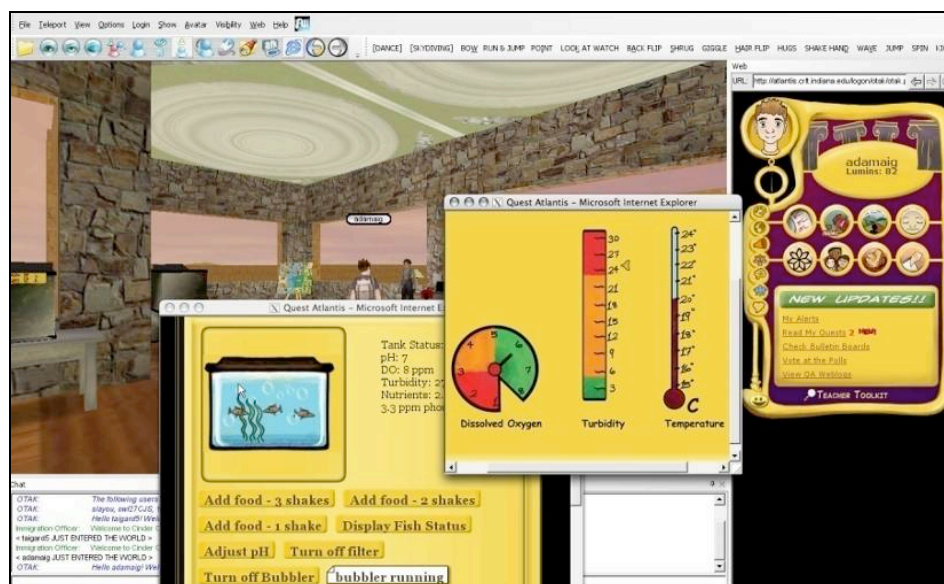
Figure 2. Screenshot from the Taiga Virtual Park unit showing a popup sequence associated with the fish tank. Behind the popup windows are the Quest Atlantis virtual space, on the left, and player homepage, on the right.

This work also highlights a tension in balancing how one positions content (ranging from implicit to explicit) and context (from noisy to tailored), a tension explicated by Barab and Roth (2006). In presenting the content as implicit in a noisy context not tightly tailored to the teaching of content, one runs the risk of the context affording engagement, but not necessarily a mindful form useful from a pedagogical perspective. Vice versa, for curricula explicit about the content to be learned, in simply focusing the contextual framing on the learning of that content, the situation is likely to become more expository, with the purpose and meaning of the content becoming bound up in its potential to facilitate a passing grade on a test rather than its real-world value. A related challenge is that a rich, authentic context for the content is likely to become a serious and complex space affording the learner only limited agency to experiment in applying the content.

Pedagogical Dramas for Realizing Social Commitment

Social Commitments

Elsewhere we have argued that all curricular design work must be considered ideological in nature (Barab et al., 2005), even if one's ideological agenda is only implicit. This is because education is not an apolitical act but one replete with internal narratives and external consequences concerning individual placement and relations with the

world. While we have little control over the existing classrooms and systemic ideologies within which our work is implemented, we do have control over those ideologies that impact our design. Therefore, an important part of this work involves designers reflecting on the explicit and implicit ideologies and social commitments that they hold, that is, the philosophical assumptions and priorities that are appropriate and likely to impact the design work. For example, one ideological stance guiding our work is that education concerns whole persons in their social contexts; therefore, in addition to promoting particular conceptual understandings as well as more general ways of thinking, education should involve the social and moral development of the individual. Here, in the designs discussed below, we have been intentional and explicit about the ideologies and social agendas bound up in our work. In fact, the designs reported below are not focused on particular disciplinary content but, instead, serve to illuminate the struggles inherent to realizing social values.

Our approach to these critical agendas, central to discussions in anthropology, philosophy, and even curriculum development, we conceive in terms of fostering in children social commitments which evolved in a grounded fashion and were nuanced to promote their uptake in diverse contexts. These social commitments, discussed by Barab and colleagues (2005) (i.e., binding oneself to a chosen course of pro-social action, e.g., Personal Agency, Environmental Awareness), represent passions or courses of action, not answers. In our work, valuable in instantiating these commitments are dilemmas that students engage in practice, in contexts designed to frame the problem with instructional scaffolding such that each child may respond in an individual way, discerning the disposition (Gresalfi, 2009) rather than memorizing it, and resolving the challenge in ways manifesting the meaning they made of it, rather than the value another placed on it. Moreover, we argue that this constellation of topics should not be separate from, nor even taught alongside or as a context for traditional curricula because they represent the same material, from a different perspective: that material is the social world we share; the meanings and practices inherited from our forebears; the legacy we prepare for the next generations.

In terms of the designs discussed here, the problematized issues or commitments were either already embedded in the foundational narratives or infused into the work as part of the designers' priorities. To illustrate, we claim that the Creative Architecture unit positions players such that they must make choices between valuing individual or artistic integrity, versus social obligation or alignment; in this claim, we directly engage the foundational ideology that motivated Rand's original work. Likewise, in Modern Prometheus, we position the player to struggle with issues of humanity and one's responsibility to the creature created by the doctor; in this move, we established a struggle that engages the player's social values

with respect to a theme informing Shelley's original work. The goal is to bring people to recognize, problematize, and complexify their underlying ideological stances, but to do so in a way that is experientially consequential: players' perspectives become reified as choices that impact a storyline not simply fictional but implicative of the real, social and natural world. The design challenge is how to support players in truly embracing such complex social issues while, at the same time, not making the gameplay feel overly pedantic.

Designer Challenges

This work entails unique challenges. In contrast to most curricular designs, these games must feature complete narratives affording cohesion and consequentiality, thus affording trajectories that bind ideologies to actualities that communicate a message. More than traditional narratives, they do this in a way that becomes seemingly co-authored by the player, who makes choices that determine the direction of the story and that also make claims about the player. More than with either non-immersive or non-interactive media, videogames position the audience such that they experience a sense of agency and consequentiality with respect to their narrative engagement. Their activity depends on affordances unique to these media and demands literacies likewise germane to the context from which these media spring, one in which audiences participate in media, by their contextual extension if not production (Jenkins, 2006). As a broad category, then, videogames represent an opportune convergence of technology characteristic of the Digital Age and well suited for fostering social commitments. We become our stories not because of what we know but how we come to know (Bruner, 1987), and it is our conviction that meaningfully engaging one's social values holds as a prerequisite the agentive epistemological stance assumed when one determines the roles of author, performer, and audience at once (Gusdorf, 1980).

Our explicit and deliberate positioning of students as audience to, performer within, and author of the narrative, situates them such that their actions make their identity claims visible and consequential. Though reading a book affords the reader empathic relations to characters within an ideological frame, when one acts simultaneously as audience, performer, and author, the player additionally makes self-evident claims about her beliefs as she intentionally evolves the storyline in a particular direction. Authority or control over narrative structure is in part sanctioned to the user, whose performance or enactment determines the course of the story, in an epistemological synthesis of roles akin to that of the autobiographer. This is inherent in autobiography, but not exclusively: it is a function not of genre but media that invest audiences with the sense of agency associated with performance and moreover, when that

performance and its interpretation involve nuance, risk, and responsibility, associated with author. For, in a game-based narrative, the consequences and choices are not left to the original author or some other character in a story but to the player herself, who is simultaneously coauthor, performer and audience.

When we design games, we embed not any outcome but particular outcomes, based on what choices the player makes and designed towards those agendas we bring the player to realize. And it is here where each designer has a responsibility to check how they are embedding their own value system in the possible outcomes, and to consider the potential influence of such positioning in terms of the player's experiencing the outcomes as their own. Designing games to realize social commitments is a challenge, with numerous struggles, opposing agendas, and even unintended and controversial consequences (Barab et al., 2004). More specifically, designing narratives to embed the player in moral struggles gives rise to power struggles, controversial issues of intentionality and ethnocentrism, and conflicts around ownership and agency (Barab, Dodge, Thomas, et al., 2007). More problematically, determining outcomes of particular actions involves the assertion of the designer's intended yet hidden biases, values, and beliefs. Even when designed within socially– agreed upon parameters, there is no guarantee that the intended narrative will be the one experienced. This remains inevitable and immutable: when crafting a narrative within a game, one is not designing *an* experience but designing *for* an experience; *an* experience itself can never be designed, but merely the context for experiences with certain likely characteristics may be offered.

Designing for Ideological Participation

In order to better inform our discussion of how videogames can be used for pedagogical purposes, we must consider how they are informed by and, in turn, conducive to ideologies. *Ideology* historically referred to visual theorizing and, in contemporary meanings, denotes a science or system of ideas; significantly, both definitions readily facilitate analysis of game contexts. In describing games as *ideological worlds*, Squire (2006) made salient that they are not mere content repositories but, rather, designs bearing embedded ideologies. These ideologies are instantiated in the design through the narrative, rules, and representations that, together, constitute *cultural simulations*. That is, players engage in comprehensive contexts that, from surface detail to deep structure, function as practice fields for participation beyond the temporary environment; the game world support players in trying on and acting out a particular ideology as expressed in the game grammar. For example, *Global Conflicts: Palestine* situates the player as a journalist working on the border between Israel and

Palestine, with an opportunity to write articles from both sides of the conflict, while navigating their own role as a journalist. Indeed, the creation of ideological contexts for not only narrative but critical purposes is familiar in such traditional media as literature. By presenting thinly veiled ideological worlds through mere text, classics like *Animal Farm* and *Brave New World* have served to illuminate and critique ideologies in operation in the world. Narrative games such as our pedagogical dramas go one step further: instead of simply being an observer of the struggles of another, in a game context, one can try on, act out, and commit to one's own ideologies.

Looking beyond classic works, a brief reflection on various contemporary media will show that a critique of the ethical worlds contained within them suggests critique of the world from which they derive, that is, a re-evaluation of the practices that constitute our public world, for games not only frame the play but shape the player's conception of the world. In such games of his as *Black & White* and *Fable*, for instance, Molyneux sought to create *ethical playgrounds* that position the player to make choices not simply bounded to the game world but bearing implication on the player herself. Indeed, not only videogames but media more broadly shape the identities of youth by instantiating ideology through story, through what Wholwend (2009) has called *identity texts*. This kind of ideological story is used globally by corporations, according to Carrington (2003): the Diva Starz dolls, for example, serve as texts that shape girls into adult consumers through seemingly playful dialogue like "I'm in a bad mood. Let's go shopping"—a startling if unsurprising instance of game-world scripts informing character development beyond the game boundaries. Because participation in play inevitably serves as a model for patterns of thought and action in life, designers of educational games must attend not simply to databases of facts and probabilities of outcomes but, moreover, to the implications of players' decisions and to the in-game and user-created narratives that give such decisions meaning. This is imperative because corporations are already doing it for us, and their messages may not always be in the interests of our children.

Having identified how ideology resides in narratives, at least historically, we now examine its instantiation in the structural decisions informing game design. Drawing on the framework explicated by Bogost (2006), games may be analyzed in terms of *ideological frames*. In the way that Lakoff (1987) discussed rhetoric as being not only informed but directed by persistent conceptual metaphor, so may games be analyzed according to ideological frames, that is, the structural components through which ideology becomes implemented. Specifically, Bogost considers the actions of games as providing three dimensions for an analysis of their ideology: the *reinforcement* of an idea through repeated action; the *implications* of the game setting for both the actions and outcomes of play; and, ensuing

from the first two dimensions, the *contestation* of ideology transpiring through reflection on the actions and their implications. In *Tax Invaders*, for example, the player repeatedly launches missiles from Bush's head to defend against Kerry's tax policies. Such simple game mechanics with such minimal textual framing effectively serve to reinforce the political rhetoric of the conservative campaign: Kerry's tax proposals represent enemy threats. In this way, the ideological frame of the game is instantiated in part through the repetitive actions that it entails. Indeed, the efficacy with which repetition reinforces patterns of behavior regardless of the designer's intent (Penny, 2004) is familiar in the commonplace critique that videogames can predispose players to sociopathic behavior. To design for player engagement that, more than simply reinforcing behavior, advances ideological commitment, we now examine the remainder of Bogost's framework.

The design of pedagogical games to do identity work involves reifying ideological commitments not only in *reinforcing* player action but in subsequent reflection, namely through the *implications* of the system of play and the *contestation* of conflicting ideological positions. For instance, in *Grand Theft Auto: San Andreas*, the player is permitted to eat only at fast food restaurants, and the implications of this dietary habit confront the player through its evident impact on gameplay: the obese character, who cannot function as effectively as a well-muscled one, loses prowess and respect, yet the player's character must eat to stay alive. This entrapment affords players the opportunity to examine the implications of the underlying ideologies, that is, the conceptual structures that give the game its real-world relevance. Such an episode of *implication* is accompanied by one of *contestation*. For instance, in the game *Vigilance*, the player acts as an Orwellian overseer armed with security cameras to identify lawbreakers. Following engagement in such an ideologically charged responsibility, the player is confronted with the irony that, through the execution of this task, she has become a lawbreaker herself. The player experiences *contestation* when she confronts the idea that this kind of oversight is "no less perverse than the game's abstract representations of moral depravity" (Bogost, 2006, p. 174) and, accordingly, must reconsider and redirect her gameplay.

Pedagogical Dramas Realized

In this section we present two pedagogical dramas with the goal of helping the reader gain a richer perspective on the constitution and value of pedagogical dramas. We deliberated in previous drafts with whether to review several dramas in brief or present one drama in depth. After talking with colleagues and reflecting on whether one approach or the other would more effectively communicate the breadth of the theory, we decided to

present two complementary examples. Each is situated as a virtual world in the Quest Atlantis project. Quest Atlantis (QA) is an international learning and teaching project that uses a 3D multi-user environment to immerse over 20,000 children, ages 9–15, in educational tasks (see http://QuestAtlantis.org). QA combines strategies used in the commercial gaming environment with lessons from educational research on learning and motivation to create interdisciplinary activities that position students as active problem solvers who take on various roles and, through their choices, experience consequentiality. QA was designed to engage students in playful narratives where they sort through multiple media to develop meanings about significant societal problems, addressing the particular narrative while evolving their in-game identity as someone committed to the social and natural environment.

Rather the acquisition of particular content, the focus is on supporting meaningful participation and civic engagement as students come to value particular ways of being and learn the content necessary to bring about personally meaningful ends. In the example of Taiga Park, discussed above, students learn about the process of eutrophication in the context of a virtual water quality problem that they come to collectively understand and change, and all this is positioned in relation to their evolving identity as someone with an environmental commitment. Such situationally embodied participation contrasts much of traditional school learning, with its emphasis on abstracted content, the only immediate use of which is its value in exchange for a class grade. Our studies have confirmed that such a participatory environment affords youngsters nuanced appreciation of the complex inter-relations and interdependencies between natural, social, and economic factors that must be weighed when solving, for example, authentic "scientific" problems (Barab, Sadler, et al., 2007). The QA virtual environment, storyline, associated structures, and policies constitute what we refer to as a *meta-game context*, a genre of play in which an overarching structure lends form, meaning, and cohesion to a collection of nested activities, each with its own identifiable rules and challenges.

As part of QA participation, each child develops an online persona—a personal portfolio and an avatar with which she can respond to game-world missions. Students use the computer keyboard to navigate their avatars around various virtual worlds and interact with friends and with non-player characters. Over time, as they complete various in-game activities, students can level-up their character on the seven project social commitments, unlocking more in-space functionalities and advancing the project backstory. The social commitments that characterize the QA meta-game context "maintain a delicate balance, variously pro-social, liberal, pluralist, and secular; they may seem 'politically correct' to the point of ambiguity or obscurity, but, at the same time, they align with strong

cultural values" (Barab, Dodge, Thomas, et al., 2007, p. 271). Our goal is for children to enter the complex dynamic of being socially committed and balancing tensions around social value dilemmas, such as whether they should help their community or maximize their individual benefit. One's level of advancement indicates a particular degree of expertise, and attaining a new level opens new possibilities for interaction in the game space. Illustrating the application of our core philosophy, leveling is not simply entertaining and motivating: it is educational and pro-social, linked directly to the social commitments. Though QA was designed to be used in classrooms and to support the learning of academic content, its game-based participatory structures, underlying pedagogical assumptions, reliance on new media literacies, and commitment to inspire engaged citizenship together provide a necessary contrast to the foci and practices that currently dominate much of school practice.

Whereas QA is a very large project with a range of curricular offerings, here we focus on two distinct worlds, each of which focuses on challenges associated with realizing a different project social commitment. First, we discuss Modern Prometheus world, inspired by Shelley's novel *Frankenstein* (1831) but with deliberate focus on illuminating the moral struggles associated with social responsibility, namely whether ends justify means. Second, we discuss Creative Architecture world, modeled on Rand's *The Fountainhead* (1943) and designed to engage children in a moral struggle of personal or artistic integrity versus social conformity or alignment. Both of these designs entailed a different developmental history and implementation profile such that the data are diverse, as, accordingly, are the cases presented here, being drawn from these data. For Modern Prometheus, we conducted a case study of an implementation in a fourth grade classroom, with one-third of the students classified as having special needs. Over 20 hours of video was collected and analyzed during the ten class periods. Beyond these video observations, we also recorded field notes, transcribed multiple pages of interviews, collected various types of student submissions (e.g., tests, essays, bulletin boards, text chat), and accessed log file data of in-game choices. Analysis of these various data informed our assessment of the curriculum's effectiveness.

To develop the second implementation story, we followed children by either by watching them at an after-school context or through recruiting students currently enrolled in QA to explore a new world. Data included submitted tests, log files, online text-based interviews, and observations at local schools in which students were playing the pedagogical drama. In building both stories, different members of the research team sifted through the collected data with the goal of identifying themes to provide insight into the challenges and opportunities of realizing pedagogical dramas. While these data are not intended to be representative of all children who have used the different dramas, they are meant to be

illustrative of the ways we see children engage these narratives. To be clear, in a manner consistent with Bruner's notion of "plausibility," we were striving not to present verifiable claims but, rather, to use these stories as illuminative in nature. With that said, and given our experience working with QA and dozens of pedagogical dramas over the years and with thousands of children, we are confident that these stories are in fact representative of participation that transpires weekly, if not daily, in our designed environment.

Pedagogical Drama 1: Modern Prometheus

Designed drama. Modern Prometheus was developed with the goal of better understanding the potential of converting a classic piece of literature, like Mary Shelley's *Frankenstein*, into a transformational play space. In terms of conceptual understanding, Modern Prometheus world engages players in understanding the role that ethics play in science and technology, to consider whether "the ends justify the means" in a particular situation, and to think about the importance of companionship. Given our desire to demonstrate actual use in schools, a further goal entailed connecting with national standards for persuasive writing and decision-making as they are involved in justifying particular game decisions. The initial story consisted of six missions, beginning with establishing the problem to be investigated, and ending with players finally deciding whether the Doctor's creation is "human" and whether its life should be saved (see a presentation of the unit at http://worked_examples.crlt.indiana.edu/projects/7). While not discussed here for spaces reasons, following the single-player trajectory that constitutes the majority of the game, players have the opportunity to engage in a multi-user trajectory, for which they work in teams with other real players and they decide if they want to find a solution by building their own creature, or use bats they catch at a local cave, or make a less potent but entirely herbal solution.

The single-player game begins with players receiving a letter from their mother, pleading with them to visit the doctor of Ingolstadt, Dr. Frank, and assist him with his project. The mother indicates that she does not understand exactly what Dr. Frank wants and that the player should use good judgment—but remember that the mother owes the doctor a debt for saving her awhile back, during a time when no other doctor could. In response to this request, the player then is able to teleport to the town where the doctor lives and that is currently suffering due to the rapid spreading of a deadly plague (see Figure 3). Upon arrival at the town train station, the player navigates her avatar around the world and uses mouse-clicks on fictional residents, who, the player learns, have lost family members and other loved ones. Through talking with the town residents,

the player learns that Dr. Frank has created a living being and that he intends to conduct medical experiments on the creature to discover a cure and save the people of Ingolstadt from the devastating plague. The townspeople, however, are gossiping about the creature, and some are even threatening to destroy it—if they can find it. Students learn that the fate of the creature and the entire town is in their hands if they do not intervene. This they do through writing a newspaper article, in which they leverage quotations they obtain from different townspeople to justify their thesis: that the doctor must be supported in continuing his work, or, conversely, must be prevented from the same.

Figure 3. Screenshot from the Modern Prometheus unit showing a darker context. The player is walking her avatar towards the graveyard, where she may choose to steal buried body parts to help the doctor.

In addition to determining whether the doctor should continue his work, players must decide the fate of his creation. They are asked by in-game characters, and must at last declare their opinion, whether or not an unnatural creation has the same rights as a human being; players eventually are prompted for their decision regarding whether the creation should be allowed to continue living. The mission also features a number of auxiliary subplots, inessential to the dominant narrative but affording individualized engagement. For example, almost immediately after they meet the doctor, players engage the first ethical dilemma: they decide

whether or not to take a package from the crypt, a task that involves lying to the constable. Given the choice they make at this point, players begin to develop the support of either the doctor or the constable—meaning these two in-game characters say different things to the player based on the decision. Players also meet other in-game characters who have interacted with the creature, sometimes positively and sometimes not, for the creature often loses its temper. Players eventually meet the creature and must explain to it their viewpoint on its humanity, or lack thereof, depending on the player's perspective. Players also can choose to engage other auxiliary plotlines, like stealing bread for a boy whose family is starving, or giving them money from their accumulated in-game funds.

Implemented drama. Central to this manuscript is the argument that videogames can support narrative immersion, but do so in such a manner that the player adopts the role of audience, performer, and author. After analyzing the data from one fourth-grade class, two researchers found numerous references that showed how students perceived themselves to be actively involved in authoring how the story would unfold. As an example, near the beginning of the game, the player has interacted with many of the characters in the game, including Dr. Frank, and is requested to pick up a package of questionable contents from the cemetery crypt. After the package has been successfully delivered, the player is asked to write a letter home in which he tries to convince her that she should not worry about his well being while working in Ingolstadt. One fourth-grade student wrote,

> Dear Mom, I am totally safe and i am at Ingolstadt. I have helped many people the mayor the fabric lady, the tavern owner, the post office people and the bugle. I want to stay to cure may people and help them and safe them from dying and im safe with the mayor and the other nice people.

In this example, in writing "I have helped many people," the student shows evidence of performing within the narrative. It is important to note that this student is not merely explaining that she read about or simply talked with other characters. Instead, in the student's description of herself as "helping" them, one can speculate that she imagined a social relationship with them, that she had engaged the fiction as a character herself, a character who, significantly, could participate in such meaningful activities as interpersonal relationships charged with compassionate feelings and altruistic activity. The student later writes, "I want to stay to cure may [many] people and help them and safe [save] them from dying."

What is important to note here is that the student is attempting to convince her mother that she has a future role in Ingolstadt. Additionally, she states that if she were not able to engage in that role, the context would be

affected in a negative way. This example shows how the narrative is not simply received but enacted. While the students stood as audience to the story, they also became the authors. After talking to the townspeople and understanding the effects of the sickness, players are asked to write to their mother and explain their actions in the game. Here is what one fifth grader wrote to their fictional mother:

> I am glad to get to write to you after all this time. I think that Ingolstadt is very creepy, yet totally awesome! (A little sad too). I just recently saw a women crying because her husband died of the plague. And I plan on staying here until further notice. The people here need a cure for the plague! Just think of poor Lizzy! Do you honestly want them all to end up like that?! And just in case you were wondering, the doctor's creation is somewhat like a man-monster thing. (A bit creepy). I don't think it will hurt me though. Dr.Frank would not make anything that would hurt me! It will take me probably in the range of a month to find a cure.

In another example, a different student was asked to write a letter that would be published in the Ingolstadt newspaper with the intended purpose of convincing the townspeople either to let Dr. Frank's creation live or, alternatively, to hunt it down and kill it. In this example, the student showed strong evidence of enacted engagement, taking on the role of performer and author, writing,

> Attention townspeople!!!! As many of you all ready know the Doctor has been working on an antidote. Here is what I think you should do. You should take the antidote because you have nothing to lose. He has tested it on his creation that I helped him to make. I had to get a lot of stuff from people and places. If you take the antidote you might get cured. IF you do not take the antidote you will probably die. I have seen so many dead bodies and so has Doctor Frank. We both do not want to see anymore. If you take the antidote we will not see anymore. You can make this happen by taking the antidote and making no more bodies.

In this example, the student positions himself as if he has impact on, or is author of, the next chapter of this narrative, declaring, "Attention townspeople!!!!… Here is what I think you should do." Consistent with the role of performer, he further warns them that if the people do not listen to him, then there could be grave consequences: "He is trying to save your life too. If you do not take the antidote you will die. If you do then you will live." This is not a passive writing stance but one where the student is conducting, commanding or authoring his audience with respect to a particular course of action. It is possible that because players have actively

performed in the narrative— "tested it on his creation *that I helped him to make*" [emphasis added]—they are more likely to take up a role of author.

In this next example, another student who had suggested that the creature should live, is now positioned as audience and feeling uncomfortable about the consequences of her actions. Telling the in-game town Mayor that she wishes neither to determine nor bear witness to the narrative any longer, the student writes,

> I am sure that all the villagers people will die if frank does not keep working on his antidote. It now seems that the antidote will no longer work the plafue [plague] is spreading faster and faster by the minute. *I will be best for the people of Ingolstadt to no longer accept me as a fellow helper of the village* [emphasis added]. If the doc continues his work he may be able to help maybe.

Beyond positioning students as pat of an enacted narrative, our goal is to engage children in experiencing struggles associated with realizing the social commitments. In this case, the moral dilemma is associated with whether ends justify means. Players encountered the issue of ends justifying the means at different times in the Modern Prometheus unit. First, players were placed into a dilemma of telling the truth or lying about assisting Dr. Frank in his quest to produce an antidote to cure the plague. Second, players had to decide the fate of Dr. Frank's creation, whether or not it was human, and if it deserved to be subjected to an experiment that could potentially save the townspeople. Finally, players had to decide if the doctor should continue experimenting on the creation to find an antidote. When asking students whether the ends justified the means, we are asking the students if the actions that they took within the game space are considered acceptable because of the specific end results that they wished to achieve. We are not judging whether their methods were legal, illegal, fair, cruel, kind, good, or evil; rather, we are interested in how students justified their choices and whether their disposition changed over time.

While working through the storyline, players learn that Dr. Frank has created a living creature. This creature could help save the people of Ingolstadt from the plague that is devastating their town. The townspeople are gossiping about the creation and threaten to kill it if they find it. Soon, they will take action against Dr. Frank if the students do not intervene. Players are given the task to judge whether or not the creation should have been created. They struggle with whether or not a creation would have the same rights as a human and eventually decide whether the creation should be allowed to continue living. Julia, a fourth-grade female, stated that she would not want to experience creating such a creature. She was uncomfortable taking body parts from the cemetery, necessary to piece

together the creation. "I wouldn't really create something because I could really go wrong in the process of it and I would create a monster that would hurt everyone." Julia was very aware of the consequences of creating something that she could not fully control and might hurt someone.

Julia also struggled with how she would test the antidote and experiment on humans. "I would use somebody that was already so far gone that they would die very soon. I would probably do that and like keep them in a really nice sheet and make them feel really nice and comfortable as possible." Rather than assuming the responsibility to create a test subject, she felt that she should test the antidote on someone close to death. Leon, a fifth-grade boy, in an interview with our research team, struggled through the concept of sacrificing one life to save many lives. "Because I believe that it is okay to sacrifice a life to save many. Exactly like what the creation is doing. Also we are running out of time to help save the village so we should test the antidote on him. And it is okay to test it on him." Leon felt that there were too many people dying. An antidote was needed and should be tested on the creature.

Because our pedagogical dramas are frequently realized in classrooms, teachers frequently play an important role in extending the lessons through classroom discussions. The teacher would frequently, at the end of class period in the computer laboratory, have the students discuss their experiences of the day. The students would often lead with thoughts of their experience in the game. Steven, a fifth-grade boy, started the discussion by questioning what it meant to him. "Well, I heard that sometimes you have to help you have to hurt. You may not be making the best decision, but in the end, it will end up helping.… Like doing things for Dr. Frank that might not be the best, but eventually they will come out and help Ingolstadt." Steven felt that the decision to help the townspeople might hurt some people, but, overall, it was better to help the town. The teacher continued the discussion with a student who loves bats and is very active in trying to conserve the endangered species.

> *Teacher:* So, in your opinion the ends justify the means, even if the means hurt.… How many agree with Steven or disagree with Steven?
> *Elle:* Well, because his answer made sense.
> *Teacher:* In what way? What was it that kind of spoke to you?
> *Elle:* I'd have to say the part where the, where he said [takes deep breath] that sometime you have to hurt to help. I agree with that.
> *Teacher:* Even if it's with bats. Even if we need to experiment with bats.

> **Elle:** It pains me to say this, but yes. Bats are better to experiment on than humans. Even though bats are endangered...and humans aren't.

In relating the bats to the creation, the teacher was able to access a part of Elle that would not have been as apparent in the game space: Elle loves bats. Despite her feelings, she felt that it was acceptable to experiment on bats because bats reproduce faster, bats are not human, and to find a solution, sometimes it has to hurt. Elle said that only under certain circumstances should something living be created.

When asking students whether the ends justified the means, we found that students' actions within the game space were considered acceptable because of the specific results that they wished to achieve within the narrative that they were creating. The play space of the game creates a context where they are able to experience a safe environment to tackle these difficult concepts. This is not to imply that the space is necessarily trivial or even not addressing quite serious issues. In fact, and consistent with the original Quest Atlantis novel, children were struggling with important issues such as what constitutes humanity. For example, one student wrote,

> Dr. Frank's creation isn't just a simple creation, but a living thing that has emotions and should be treated like a human being. Even though he has been rather angry, its for reasons you don't know.

Interestingly, in this comment we see the student both equating emotions to being human, but also alluding to a personal history that the student has had with the creation, a history not understood by the townspeople considering lynching the creature. We mention it here to show the gravity of the issues that players in the game world engaged, for, and central with our initial argument, games create a sheltered context not to simply have fun but to explore one's biases and perspectives on significant issues. Paradoxically, in contrast to the more commonly abstract presentation of to-be-learned content in schools, students do this through engagement with real issues, even if in the safe context of a fantastical virtual world.

Pedagogical Drama 2: Creative Architecture

Designed drama. Based on Rand's novel *The Fountainhead*, the narrative for the Creative Architecture mission challenges players to grapple with the dichotomies of personal integrity versus social alignment. This classic work of literature provided us a design scaffold, introducing tensions that we worked to embed in gameplay rules and narrative. Users interact with characters at an architecture firm that match the names, physical

characteristics, motivations, and points of view of characters from Rand's novel, putting users in the middle of the same conflicts and themes from the story. Rand's novel clearly values one side of the philosophical conflict central to the story over the other, that is, personal integrity over social alignment. The Architecture mission, however, presents the perspectives of characters on both sides of the conflict—namely, Howard Roark and Peter Keating—and eventually forces players to align themselves with a particular architectural firm. Additionally, this transactive experience lets players author their trajectories in the story (albeit to a limited extent) and experience the impact that their decisions have on the rest of the firm and their interactions with the rest of the virtual world.

These themes are further explored in this space by affording players the ability to learn about the foundational tenets of architecture and to build their own virtual 3D creative expressions in line with the decisions made earlier in the story. Specifically, players favoring creative innovation at the beginning of the mission are given free reign to build what they want, but are not guaranteed many contracts; those favoring commercial success and community approval early on have many opportunities to build, but are restricted regarding what they are allowed to design. At the outset of the mission, players embark on a journey to help the architecture firm shape the future developments of a new virtual province, Qville, that has recently come under the control of the City Mayor. Qville is a suburb that the Mayor considers problematic in that the young architects who developed it made architectural choices with little constraint, and therefore, most buildings show little commonality and very liberal design choices. As a result, the area appears chaotic, with the Mayor invested in exercising control through a common set of design constraints that he thinks each future builder should heed. Toward this end, it is his hope, backed by financial supports, that all new architects will join Peter's more conservative team, who are committed to following his rules and, from his perspective, will bring about the much needed order to Qville.

Initial game tasks involve viewing buildings in Qville and in Media City, where the architecture firm exists (see Figure 4), and writing up brief building reports to help communicate with the Mayor's office. Importantly, Media City includes buildings created by both Howard Roark's and Peter Keating's sides of the firm, so players see buildings based on both architects' commitments—Peter's conformity and Howard's artistic integrity. Upon successful completion of the introductory mission, players are invited to become a Junior Architect in the firm, being thrust into the private and contentious world of the profession. They discover that Peter Keating, one of the NPCs in the game and the antagonist in Rand's novel, is committed to adhering to the constraints of the Mayor, and all of his architects must abide by a strict set

of rules in order not to upset the city building officials, especially the town Mayor. In return, the players receive cols, in-game currency, for their efforts. On the other hand, Howard Roark, the protagonist in the novel, seeks to follow his artistic and personal vision for architecture rather than compromise his designs to satisfy the officials and outdated traditions. Howard is unable to offer his team members cols because he himself is suffering financially from losing clients in order to uphold his values. By design, players in the Creative Architecture unit face a paramount choice: to join to be an apprentice in Peter or Howard's architectural firm. Choosing between the two teams affords the player a sense of agency and consequentiality that affects the particular narrative they experience and the types of decisions that they can make and that are reinforced.

However, choosing to apprentice at a firm is only the beginning of the journey to discover the fountainhead. Once they make the decision to join a particular firm, players must learn about and apply principles of architecture to their virtual 3D building projects with the guidance of other characters from Rand's novel, including Ellsworth, Dominique, and Gail, as well as the author herself. Each of these characters offers the player tasks to complete, through which elements of architectural design (structure, aesthetics, story, and message) are learned. There is also an in-game 3D challenge that reifies the values of each of the architects into the building objects, with particular moves being beneficial if one is on a particular team; for instance, using a uniform brick texture serves Peter's team but not Howard's. In other words, players must find a solution that aligns with their mentoring architect. As the players learn about architecture at the firm, they discover that Media City was built with these same competing objectives, thus heightening players' awareness of the architectural styles in the world around them. Further, such perceptual grounding highlights the larger consequences for joining either team as it relates to the other citizens of the city as well as the player's relationship to the Mayor. The mission ends with the players submitting and critiquing their original 3D building designs for display in the Hall of Fame. Upon successful completion of the mission, players are also invited to occupy a more permanent plot in the new annex, Qville, and resume building—this is where they can continue to write their own stories as architects for other players (cf. Bruner, 2002). They are also offered the job of Building Inspector, for which, as experts, they traverse Qville and inspect other player's buildings, based on what they have learned during their apprenticeship.

Implemented drama. In contrast to the Modern Prometheus unit, which was primarily under the control of the teacher, our desire for this unit was to allow for youth to engage in transformational play spaces in the out-of-school hours. As such, we tracked groups of players both online and at a local Boys and Girls Club in our efforts to better understand the

architecture narrative and the ways in which youth are taking it up as authors, performers, and audience members. Through analyzing data from 44 after-school participants, researchers found evidence of the players positioning themselves as audience member, performer, and author—each in two distinct ways that were also intertwined with the choices made in-game as well as the player's value system. The data presented were gathered from in-person ($N = 19$) and online interviews ($N = 25$), as well as from the written responses that the players submitted in-game. We focused the online data collection on the first 25 players to begin the unit upon its release, but in the subsequent three weeks, over 200 more began playing online.

Figure 4. Screenshots from the Creative Architecture unit showing the two architect firms. The office on the top is Peter Keating's office, and the one on the bottom is Howard Roark's.

In Creative Architecture, players experience the narrative of *The Fountainhead* as it unfolds through gameplay. As players interact,

sometimes they can change how the narrative unfolds, but at other times they can only experience the outcomes as designed. One of the central dramas that unfolds is the conflict between Howard and Peter as rival architects. Players watch the dramatic narrative unfold and formulate opinions about the players. One player, tigerpde, comments on the conflict, "Howard has the passion of art, so what if he doesn't pays cols?" While she is unable to change the circumstances and outcomes of the mission, we see her still formulating opinions about what she is seeing unfold. Secondly, players are positioned as audience members when they are viewing the buildings that other 3D architects have built. In the game, players are asked to articulate the messages they are reading in the surrounding buildings as well as their feelings and impressions about them. Misty7WWS, wrote, "The building has all the utilities a family would need, for cooking, sleeping, watching tv and just having fun. The feelings I get are just great. It makes me feel like it's my own house at home." Misty7WWS is audience to the building decisions that others have made; in this case, she feels as if she is at home in the dwelling. Similarly, Edsimpson views the Media City Mall and reports that

> I like the central location of the elevator. It seems to connect all the Mall's shops and restaurant. The open air feeling of the glass walls also connect to the glass elevator. It works together as a theme. When the elevator opens on the second floor, the spacious and elegant space of the restaurant is fabulous. It gives one the feeling that you are dining in the privacy of your own dining room.

In most reports, players seem to identify certain emotions or feelings that the buildings evoke—as if they are an audience to productions of art.

The player also becomes a performer when they fulfill roles that are asked of them and play out a character in the narrative. This happens as players are asked to do something to move the narrative forward, through requests that frequently have a playful or gaming feel to them. For example, Peter requests that young architects working with him wear a standard uniform as appropriate dress that will also identify them as members of his team. By contrast, Howard requests that the players sneak into the local Poet's Lounge to engage in a transgressive act to preserve artistic integrity at the expense of losing the favor of the Mayor. At the Boys and Girls Club, one of the students turned to another and showed him the suit that his character was wearing and remarked, "That's the suit you get when you join Peter!" These symbols became means by which the players aligned themselves with particular values and perspectives while performing in ways that were requested of them through the in-game dialogue. Depending on how the players regarded these symbols, they either became coercive or they embraced them as tokens of community building.

Players also performed the narrative in architecture when they chose to build in line with what would be expected of them from their master architects (i.e., how Peter or Howard would like them to build). After experiencing a significant part of the narrative, and talking with several architects espousing different views, AS25NG reports to Peter that "its too risky to give people something out there and its much safer and smarter to give them something traditional." She wants to be a member of Peter's team because she believes that "formality in buildings is important." In a similar vein, loboMLCau thinks that

> It is important to give clients what they are paying for to produce is because if you did anything else, for starters, that would be fraud. It is also important to keep in mind that, if you were the client you would want exactly what you payed for. Although it is important to do that, the most important thing is that, if you give people exactly what they want, then they are more likely to recommend you.

Similarly, in the following interview, Mikey, who joined Peter's team and was playing at the local Boys and Girls Club, is engaged in building and is in the middle of making sense of what Peter would want him to build. The interviewer probed him further about his decisions and rationale in the following informal interview.

> *Interviewer:* Let's talk about your building. So, why did you pick this color of wall?
> *Mikey:* Ummm, because that's boring wallpaper to me, and Peter is boring, but he gives you [cols].… So I just think that because I thought he would like it.
> *Interviewer:* And why did you pick the interior with the ornamental rug and maroon furniture?
> *Mikey:* Because I remember inside of his office, it was kinda like that, so I just did a normal inside of the house.
> *Interviewer:* And what about the outside, your exterior?
> *Mikey:* I just thought that Peter would just want, like, a little plant and a green tree to just be normal, 'cause Peter is normal.

In this interview, Mikey points out that he is trying to align his building practices with what is expected of him by Peter. He chooses the wallpaper, the interior furnishings, and the exterior elements because he believes that these are choices that Peter would approve of; he admits, however, that he thinks that they are "boring" and "normal," which indicate that he would prefer to make different choices. To be sure, the primary motivation for most players to choose Peter's team was the pay that they would receive for their work. As such, we found that similar to Mikey, many of the players on Peter's team (but not all) positioned themselves as performers of the narrative. By contrast, Howard's team members were almost

entirely aligned with Howard's values, positioning themselves to be authors more often in the dataset, particularly during building moments.

Figure 5. Screenshots from the Creative Architecture unit showing two player-designed buildings. On the left is a typical example from Peter's lots, and on the right is a typical example from Howard's lots.

Further evidence of the players' performances comes from the building designs themselves. The buildings acted as reified forms of the player's performances. In the following examples, there were clear distinctions in aesthetic designs made between those who were building on Howard's and Peter's teams. Figure 5 includes images taken from the lots where the players were allowed to openly build toward the end of the mission. Members of Peter's team created buildings with a rectangular shape and classical, subdued textures and colors, as well as conventions such as ceilings, doors and windows in expected locations. In contrast, one finds Howard's lot to feature more color, different textures and shapes, and unconventional designs such as buildings without ceilings—all in line with the values of individual integrity and creative expression. Creative Architecture, while giving players ample opportunity to be part of the narrative's audience and cast, also allowed for players to take on authorship roles. When players made reference to how they perceived

themselves to be actively involved in the narrative's unfolding, this was considered to be an authorship moment in the data.

Becoming an author in the context of the Creative Architecture mission requires the player to contribute to the narrative through the ways in which they build as well as the ways in which they align themselves with the narrative to make meaningful decisions. Essentially, players ask themselves who would they become as architects, and what would they build? In the case of this mission, the architect in the game becomes the author of the narrative. Central to the unfolding narrative is the decision point where players decide whether they would like to apprentice with Howard or Peter, a moment when they are substantially author the narrative and affect the outcomes of the story. At the Boys and Girls Club environment, Brian intensely stated, "I am NOT gonna be bribed by Peter!" Statements like this are one way in which the players are responding to the central decision in the narrative and choosing to align themselves with a particular set of values for a reason.

Students from both the online class and the after school program gave interesting and well supported arguments for their joining one of the groups. loboMLCau justified to Peter why she joined his team:

> [It was] because of the morals. The buildings that you create do have a meaning but they leave the area looking well structured and meaningful. But it Howards group, his buildings are creative and leave the area rather messy. Even though I prefer being creative, I know that this town needs buildings with meanings to show that Media Village is a safe and happy one. That is why I chose your team.

Even though she recognizes the importance of creativity, she chose Peter's team because she prefers to work towards a rather structured pattern that results in a tidy and safe space.

In an online chat with Gabriella, it was revealed that she was in need of cols (the game's currency) and was requesting that the interviewer give her a job because she needed money. The interviewer asked, "well you seem to need cols, right? […] Peter offers cols to his architects. Why didn't you join Peter (you would get paid) and you chose Howard?" Gabriella replied, "yes i know but no matter wat i dont wanna switch…but like i said, i can express my true self with howard even if it mean not being paid." This theme was evident in most of the interviews with Howard's team members. While the overwhelming majority of Howard's team members aligned themselves with the Howard's values and felt like it was an easy space for them to contribute to the narrative, this was the case for some of the members of Peter's team as well. One player, edsimpson, stated, "I picked you [Peter] for 3 reasons: (1) is that your

paying me (2) is that your with the mayor and i want to get on his good side (3) is i love the way you build." The motivation for choosing between the two teams and the reasons and rationales for doing so enabled players to position themselves as authors when they had opportunities and made choices that were in line with their identities—an important consideration when designing for such opportunities in gaming spaces.

Players also authored through their in-game building, to expand the narrative possibilities in the mission, by assuming the identity of architect and using 3D building as a means to express themselves and communicate with others. When interviewed, one player commented on his building practices in the following manner:

> *Interviewer:* Why did you pick that color for Howard? [pointing to one of the four wall colors]
> *Gabe:* Because I wanted my house to be all colorful, so I chose that for a color pattern. Purple is a good match for this stuff. In fact it looks good with this! In fact it looks good with the back end from this couch.

In this excerpt, Gabe is making choices about the wall color and aligning these practices not to what Howard expected of him but to his own aesthetic preferences. In doing so, Gabe and others begin to build identities as architects and push their narratives into the *Fountainhead* storyline, fulfilling the theme of building for personal integrity.

Building in QA not only allows players to author their own experiences, but the 3D world then becomes available for others to view and potentially position themselves as audience members and performers in these 3D spaces. One of the first students to finish the Creative Architecture mission had built in Howard's building area and was searching for ways to extend her experience in the game. In one of the online conversations with an embedded ethnographer, the student proposed building an "inspiration house for other Questers [QA students] to see and take ideas" at the front of Howard's building area. Her goal was to show the rest of the builders what Howard's ideas were and ways to express their individual identities and creativity. She pointed out that people can "take ideas" from her house before they build theirs. Indeed, other players have been visiting her house before starting to build. In the mission, players were first positioned as audience, and then as performers, and finally opportunities to author were given to the players as the mission unfolded. We saw this as a cycle because ultimately, as players were beginning to author, other players became audience members to these decisions, making the cycle complete itself and begin again.

Conclusions

Elsewhere we have focused on our play spaces designed for supporting the learning of academic disciplinary content, referring to them as *curricular dramas*. Reflecting the casual and imprecise alignment between traditional academic disciplines and the body of knowledge represented by a culture's narratives, the pedagogical work done by traditional literature often involves a domain tacitly recognized but inconsistently articulated and, perhaps befitting its local, interpretative quality, still unstandardized. While sometimes coupled with traditional disciplines (e.g., Social Studies, Civics) the social commitment focus in this reporting represents a perennial and ubiquitous topic of consideration, variously termed character or values education, identity work, or ethics. Informing our work is our conviction that educators have left many of these important life issues to implicit, idiosyncratic, and sometimes malevolent manifestations or, at the very least, to the whims of multinational corporations who have become among the dominant storytellers of the 21st century. While some of these life lessons do occur in classes led by teachers motivated by the same convictions as ours, we strive to more intentionally engage in the design, and contribute to the availability, of educational media affording such important lessons. A core focus of our work more generally is to support children in adopting commitments and in understanding the dilemmas associated with realizing them in actuality. Toward this end, the present manuscript has addressed the topic of designing videogames to engage children in social commitments.

In these narrative games, children perform actions, experience those actions' consequences, and reflect on the underlying social values that these situations were designed to engage. Thus while the design work involves particular narratives, the focus and purpose was to engage youth in the deeper struggle of understanding the dilemmas inherent to realizing a particular social commitment. Our pedagogical intent, regardless of disciplinary affiliation, concerns commitment: the steadfast disposition characterizing participation and guiding development. A central goal of the transactive narratives we design is to help students move not confusedly but purposefully, to help them find direction not by accident but *by design*, to help them engage in the creation of personal stories within the contexts of our media and in their lifeworlds beyond. More than a theoretical argument, we shared data from the implementation of two instructional interventions designed to leverage game narratives as learning contexts for engagement with social issue dilemmas. While the designs differ in the stories they harbor and the issues they present, their similar objectives—to promote individual commitment to perennial social values and to do so through a game-based, pedagogical drama—reflect an ongoing directive of the Quest Atlantis project. The results show a range of achievement toward this end, largely successful but, more importantly,

nuanced according to the curricular unit and the individual student. Moreover, these pedagogical dramas provide a useful contrast, illuminating two different approaches for designers to integrate story and game, and as such, the results suggest the relative effectiveness of different design decisions and strategies.

The first, an adaptation of Shelley's *Frankenstein* novel into a game, resembles a traditional interactive story but situated in a 3D virtual world. In this case, students are recruited to solve an ongoing mystery in which they must choose between contrasting theses, collect evidence in support of their thesis, and, based on their decisions, engage in different in-game conversations and experience a different final chapter. Though the superstructure represents the design decisions—or authorship—of the research team, each student engages in all of the various story roles: as audience they witness the unfolding narrative, which they in fact perform as a character within the story; moreover, they experience the role of author, supported by the fiction of their role-play as reporter as well as the agency they enact upon the branching storyline. This contestation of authority dramatizes the significance and dynamics of the featured social dilemmas, with each player bearing responsibility for her choices and their consequences. Such blending of designed story as communicated through scripted characters and emergent narratives is one of the potentials of videogames that makes them such an interesting storytelling medium (Squire, 2006).

The second example, a repurposing of Rand's *Fountainhead*, involves less of a contested space, less narrative focus on a crucial dilemma and decision; rather, the narrative structure supports players developing different trajectories throughout. Players choosing to align themselves with one team or the other built different styles of buildings, engaged in different storylines, and formed different allegiances. Further, authorship was as evident in the kinds of structures that players built as it was in the kinds of statements and decisions that they made. As the data suggest, from the perspective of the player, the design afforded not merely different possible endings that they determined, but, rather different trajectories that they experienced. Thus their roles as performer and author became more seamlessly connected, and the agency afforded by these roles, more distributed. The design process involved not simply establishing two ideals, but integrating trajectories, decision points, interactive rules, and narrative tensions that, when engaged, made particular identity claims about the player enacting a choice. Importantly, the design afforded the opportunity for each player to instantiate her emerging interpretation in the form of architectural design, for subsequent players to interrogate and infer what it means to associate one's work with a particular perspective.

Generally, this research reaffirmed that the immersive, interactive media that we previously employed as vehicles for narrative engagement, even toward pro-social ends, remains effective. This has been a staple in our research and promises more success in our endeavors in the future. More specifically, adapting extant, even classic narratives for these ends was likewise found to be effective. These implementations primarily concerned neither appreciation for the original authors' literary devices, nor dependence on a student's textual literacy. Rather, the *concern* of the author regarding particular social themes or dilemmas was shared with the students, who engaged them using a more broad set of literacies, ones arguably essential to their personal, social, and occupational success in the modern world. Across the two designs, students showed not merely responsiveness to, but interest in the story elements. In fact, when we examine the curricular designs in terms of the canonical elements of setting, character, and plot, we find each element successful in contributing to student involvement. This narrative engagement, afforded in books by textual description and in films by audiovisual displays, in the present research entailed both textual and graphical depiction, with both forms, significantly, affording interactivity; indeed, the text and graphics also afforded immersion, either narrative or perceptual, according to the modality. Looking at student engagement in terms of these affordances of the media, chiefly the sense of immersion and interactivity, we again find success in eliciting student involvement.

More generally, the designs supported student engagement in three respects: (1) student engagement with the narratives and consideration of the social dilemmas inherent in each; (2) student engagement in the enactment of, consequences of, and reflection on their expressed choice regarding the central dilemma; and (3) student engagement in the afforded roles of author, performer, and audience of the stories related by the game dramas. It is in establishing these three opportunities that pedagogical dramas bear such rich potential, a potential that makes them powerful as a new form of story—especially when explicitly enlisted towards pedagogical ends. We observe an unmistakably personal and profound response in our students when they are asked to be audience to the impact of a narrative direction which they have authored. We observe it, too, when they are asked to play performer, interacting with characters who explicate opinions on the outcomes that the player just occasioned. All of this is what these spaces uniquely afford, and in all this lies their potential as a new learning medium. One's experience of being author, performer, and audience to a narrative yields a dynamic set of positionings with the potential to simultaneously establish a narrative and convey a lesson, all in a manner that grants the player involvement, ownership, and responsibility.

Many aspects of this player experience remind us of our experiences with books. For example, when a player in the Creative Architecture unit stumbles into a structure built by another player also on Roark's team, their response is akin to their discovering a margin note when reading a book borrowed from the classroom shelf. Likewise, in the Modern Prometheus unit, when a player finds the girl's diary recounting her experiences with the doctor's creation, a feeling of empathy springs forth much in the way it does when reading a traditional book or, as a closer comparison, a book within a book: the girl's diary in the virtual space is as real as the letters within Shelley's story. However, something qualitatively different transpires when we allow for interactivity such that the player is no longer reading someone else's story but enacting her own: she becomes the first-person protagonist, turning some pages with anticipation while, at the same time, writing the precursive conditions that bring that next page about. Importantly, however powerful narrative games may be, it is not always educational nor, more relevantly, pedagogically useful to grant authorship to the player in confronting and realizing the lessons the unit was designed to convey. As a result, in our space, one's authorship is sheltered, structured by the design team such that the game dynamics do not undermine or unravel the narrative intent, nor the pedagogical lessons it was designed to promote.

Implications

The present article advances our understanding of designing narrative games by explicating the need to position students in various, deliberate, and sequential roles, and to expose them in those roles to opportunities and events that occasion their enactive and reflective engagement (see Figure 6). That is, we must design for the roles of author, performer, and audience, and provide the product of each mode of engagement as the seed for the next. From the perspective of the player roles, when acting as a character within the drama, one simultaneously constitutes both author and performer by manifesting choices through action or behavior. These actions bring about consequences determined by the combination of the rule definitions and the individual's decisions, an affordance–effectivity coupling like a chemical reaction inherent in the system but precipitated by the individual. Then, still as a character in the drama, one occupies the roles of both performer and audience, invested in the story context but witness to the actions that ensue from one's deeds. The more intentional these deeds were, that is, the more invested with purpose and aligned with commitment, the more influence their outcomes bear on oneself. Now, as both audience to the drama and author to its next act, one reflects on these implications: Was the intention so noble as to warrant such outcomes? Were those the right choices to make? Were these results expected to

follow, and would they happen again? Do they question one's motives and challenge the projected plot?
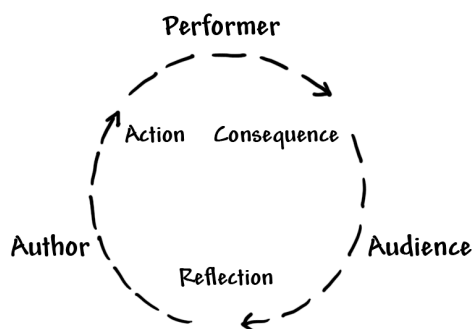

Figure 6. Different roles of the player (author, performer, audience), and the opportunities they support.

Beyond the scope of this study, our research asks more generally how the opportunities of this modern world may best serve our youth. A central focus concerns the appropriate use of immersive, interactive media—videogame technology, in short—for wide-ranging educational ends. Even this, however, too narrowly describes our task, for by *videogames* we refer to not only the media but also their contents and, further, the contexts that we build and that develop anyhow around them: the transmedia characters; the graphic style that increasingly brings coherence and integrity to the project and to the children's experiences; the themes that recur through online activities as well as in-class discussions. All of these represent our project and, significantly, our interests and concerns. Moreover, we approach our design-based research work as educators and as scientists, drawing on not simply the commercial tropes and commonplace reckonings of what attracts the attention, passion, and loyalty of children, but also the research. While we review industry reports, follow business news, and shamelessly enjoy popular culture, we also draw upon diverse fields of inquiry so that colleagues' work may inform our own while, at the same time, we provide lessons to inform theirs. These influences, moreover, contribute to a balance in our work: they serve to challenge assumptions and restrain impulses, at the same time offering a vision not simply of what has occurred but what could be.

In order to better understand how a designer might adapt the classics from print to multimedia and, moreover, how the reader might engage them when adopting the role of player, we researched the matter. We designed and implemented these and other pedagogical dramas; we observed children's engagement with them; and we studied the records they left and the artifacts they made. The lessons that the data tell about children's experiences in these innovative contexts hearkens to their encounters with traditional media. A girl may read a library book, or she may play a pedagogical drama. In the first case, she may empathize with the

protagonist, either taking his perspective or imagining herself in that role. In the latter case, she may experience agency through her avatar, either acting out fictitiously or behaving in a realistic way. In the first case, she may notice the alliteration, may discern in the phrasing an allusion to a classic sonnet. In the latter, she may observe the symmetry, may recognize in the structure a reference to a famed cathedral. She may mention the book to a friend; perhaps her friend has read it, too; they talk about what this character said or what that character wore. Or she may mention the game to a friend and talk about what she said and wore. The girl reading the book may underline a passage, may draw in the margin her depiction of the hero; playing the drama, she may rearrange a table setting, may construct a virtual building, something suited to the hero.

The different media afford different modes of engagement and evoke different literacies. Both media entail a heritage of contestation, of supplanting traditional ways of knowing and of demarcating the present as a time of change. However, our work focuses on understanding the power of videogames for building transactive narratives where the player is embedded in the story and making decisions that direct the unfolding narrative. In this way, playing one of our games likely occasions consideration of personal biases, making salient the underlying ideological questions so central to these classic works. It is for this reason that we regard our designs as pedagogically useful activities: at the risk of being overly didactic, they increase the likelihood of their underlying meanings being engaged. In particular, our focus was on using videogame technologies and methodologies to develop spaces where players can experience designed narratives in a manner that allows them to gain insight into the complexities of ideological struggles as well as the implications of making particular choices. To be clear, we do not assert an evaluative comparison between the classics and our adaptations, but only a qualitative difference, and indeed, we do not argue that the adaptations bear fidelity to their manifest details but, rather, to their underlying ideology. In short, we have circumscribed our claim to this: that such transactive narratives as these represent a novel and useful pedagogical tool. Importantly, they have the potential to make more contemporary and accessible the important life lessons embedded in the classics, and to do so in a form that captures the attention and enthusiasm of the current generation.

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