

## The Digital Divide and its Discontents

by Matthew Payne

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### **I. THE DIGITAL DIVIDE & ITS DISCONTENTS: A LITERATURE REVIEW**

1. Discussions of the "digital divide" continue to endure well over a decade since its popularization because no policy solution has yet bridged the social inequities between the information and communication technology (ICT) haves and have-nots. In fact, the digital divide's basic meaning has transmogrified into a vast array of differing definitions and conceptions over its brief history -- a single techno-social fissure that has splintered into a multitude of cracks. This polysemic social condition is also a profoundly contentious discourse. The digital divide discourse highlights the inequitable social distribution of ICT access in a world that moves ever steadily towards Manuel Castell's vision of a global "network society." The failure to have equitable social access to these tools, or a lack of skills to operate them, is to be a point in a network without links. And, disconnected points in a network might as well not exist. The divide, then, is not about computers or connectivity *per se*; rather, the divide is a simplifying metaphor that questions the social gaps between humans that use, and societies that rely on ICTs. Framed as such, the digital divide is not only a technological predicament, it is also an ethical crisis. As ICT innovations proliferate at exponential rates, and as our communal dependency on ICTs strengthens, the opportunity to leave others behind increases in kind. This techno-social dilemma poses the question, "What do we owe the have-nots, and how might we help?"
2. Before discussing this paper's recommendation, charting the digital divides and their inequities are in order. Recent scholarship has endeavored to articulate a more nuanced conceptualization of the digital divide as a series of social gaps. Much of this literature refuses to view computer and Internet access with a Pollyanna technological determinism, and questions the reductive dichotomy of ICT haves and have-nots. According to Henry Jenkins, the Director of Comparative Media Studies at MIT, "The rhetoric of the digital divide holds open the division between civilized tool-users and uncivilized nonusers" (Young 1). USC assistant professor, Tara McPherson, seconds this, saying, "Obviously there is a digital divide – the idea of

challenging the digital divide is not about denying its existence. But to ensure that the focus on the digital divide doesn't naturalize a kind of exclusion..." (2). Similarly, Oscar Gandy and Sharon Strover make note of how markets operate in the creation and maintenance of these divides, and how divisive political rhetoric damages efforts to locate remedies (e.g., such as former FCC Chairman Michael Powell's misnomer - the "Mercedes divide"). The rhetoric of this discourse is not the only target of recent research. Originally, the digital divide referred to people's polarized levels of access to computers and the Internet. In the last five years, however, contemporary criticism has witnessed an expanding conceptualization of where, and between whom, information inequities occur, and what these gaps entail for their different user groups.<sup>1</sup> These divides are not necessarily new, as in *recently formed*, but result from a dissatisfaction with how the divide has heretofore been defined as a monolithic social fissure. The following review showcases the breadth of recent divide literature, and its relevance to new media literacies.

3. Besides offering new ways of talking about ICT inequities, the following pieces are praiseworthy because they complicate Ronald Rice's dichotomous "pessimistic" and "optimistic" perspectives. These texts offer solutions to digital divides by way of the very new media that are under scrutiny, in effect, demonstrating that the problems of access and use are cultural, not technological. In other words, these pieces do not simply cheer or jeer the impacts of new media technologies. Pippa Norris understands the divide as a broad, tripartite social structure:

The *global divide* refers to the divergence of Internet access between industrialized and developing societies. The *social divide* concerns the gap between information rich and poor in each nation. And lastly within the online community, the *democratic divide* signifies the difference between those who do, and do not use the panoply of digital resources to engage, mobilize and participate in public life... (273).

Norris praises the Internet's potential to strengthen pluralism and democratic processes, even as powerful conservative forces threaten to co-opt and commercialize our shared virtual spaces. Oscar Gandy elaborates on Norris' suspicion, arguing that marketplace logic exasperates existing inequalities and, in the drive for profit, manufactures new information divides.<sup>2</sup> "The disregard of the needs of the audience as citizen in favor of the desires of the audience as consumer is likely to widen in what we have come to describe as the new media environment" (Gandy 448). Despite the seeming pessimism of his statement, Gandy believes that a citizens' movement will emerge and will be empowered, at least in part, by new ICTs.

4. Other researchers have identified a widening gender gap among Internet users (Liff and Shepherd) and in computer culture more generally (Clark and Gorski). Both reports commend the narrowing of the access divide, but temper that optimism with the observation that the “ability to use access,” the “take-up of access,” and the subsequent “impact of access” continues to fuel gender differences between men and women (Liff and Shepherd 5-7). According to Clark and Gorski, this gender divide is borne of “the inequitable practices in education, particularly in those subjects most clearly related to these media, are preparing tech-savvy, tech-valuing, and tech-confident men to fit into high-paying technology industry jobs while women are discouraged from seeing related fields and occupations as accessible, desirable, or attainable” (30). The fact that women continue to receive less socialized encouragement and acceptance has clear implications for new media education.
5. Chika Anyanwu addresses the rapidly changing educational landscape, paying particular attention to how it has been affected by globalization, and other economic and sociological forces. Of particular salience are Anyanwu’s comments about cultural literacy and access to technology: “...it is not enough to merely change our pattern of reading and writing from text to screen; it is also necessary to understand the binary logic of the computer screen and programs” (397). With every technological advance, there is also “mental displacement” (Anyanwu’s phrase), which challenges our standard pedagogical practices. Elisabeth Hayes (in press) offers answers to this challenge in relation to the new media literacy needs of students in basic adult education. “Ultimately, digital literacy education must be integrated with broader community development projects in which technology is used to attain broader social, political and economic aims” (Hayes, in press). ICT literacy must not only be taught, it must also be contextualized within a user’s community to be of value.
6. Jan van Dijk and Kenneth Hacker argue that the “skills and usage” (a.k.a. digital literacy) divide will not disappear with increased access to ICTs alone. Unfortunately, little is known of the beneficial impacts of digital literacy programs. The “hardware orientation” – the technological deterministic position that grants computers and Internet connectivity with *a priori* powers – has dominated most policy solutions dealing with the digital divide. Van Dijk and Hacker also roundly reject the similar utopian argument from free market advocates: “The disappearing divide position is politically motivated by the wish to prevent government interferences...We want to call attention to the fact that every government, including those committed to laissez-faire capitalism as in the United States, has implemented educational and cultural policies” (322).
7. While some deny the long-term possibility of digital divides (see, Compaine), this paper agrees with van Dijk and Hacker’s position that these gaps do exist, that they are a

social ill, and that innovations and markets alone will not fix them. After all, the divide is not the false dilemma between two distinct groups, but is a wide-ranging index of differing levels of access to information tools and possession of literary abilities. Like the aforementioned articles, I too assume that we have social responsibilities to those who wish to adopt ICTs but cannot, and this paper provides recommendations to alleviate digital literacy divides. "The fundamental task of future society will be to prevent *structural* inequalities in the skills and usage of ICTs from becoming more intense" (van Dijk and Hacker 324). Battling structural inequalities by way of digital literacy education requires a variety of solutions that must be implemented in different social, domestic, and vocational spaces. The most ready-made sphere to begin such efforts is in education. Looking to the future, van Dijk and Hacker predict that, "Learning digital skills will be a strategic objective for educational institutions at all levels" (326). Therefore, this paper contends that digital literacy programs need to be available to all segments of the population: from K-12, to adult basic education, to senior citizen centers.

## II. CRITICAL LITERACIES & NEW MEDIA

8. The fact that people must have access to the human resources that enable meaningful ICT use is a recurring motif in recent divide literature, and one that is masterfully taken up by Mark Warschauer. According to Warschauer, there are five primary similarities between access to ICTs and access to literacy:

First, both literacy and ICT access are closely connected to advances in human communication and the means of knowledge production. Second, just as ICT access is a prerequisite for full participation in the information stage of capitalism, literacy was (and remains) a prerequisite for full participation in the earlier industrial stages of capitalism. Third, both literacy and ICT access necessitate a connection to a physical artifact (a book or a computer), to sources of information that get expressed as content within or via that artifact, and to a skill level sufficient to process and make use of that information. Fourth, both involve not only receiving information but also producing it. Finally, they are both tied to somewhat controversial notions of societal divides: the great literacy divide and the digital divide. (38-39)

Warschauer's observations underscore the fact that, despite their deterministic fanfare (both the utopian and dystopian views), new media ICTs still require literate users; they are not self-contained educational panaceas.

Moreover, literacy itself is not an apolitical skill. "Acquisition of literacy is a matter not only of education but also of power" (46). The intersection of social power and new media education falls squarely in the domain of "critical media literacy."

9. This paper owes its working definition of critical media literacy to recent works by Douglas Kellner and Kathleen Tyner. Kellner argues that his critical media literacy is a two-part, mutually constituting reading skill - one that fuses textual hermeneutics with media production. Interpreting new media texts does not utilize a single, static literacy skill set, but makes use of an array of analytic lenses. "The term 'multiple literacies' thus points to the many different kinds of literacies needed to access, interpret, criticize, and participate in the emergent new forms of culture and society" (Kellner 97). Similarly, Tyner's conceptualization posits that new digital media departs from traditional media insofar as it facilitates non-linear browsing, privileges interactivity, allows for the manipulation of sound, text, stills, and moving images, and can perform these tasks at rapid speeds. She also seconds Kellner's call for multiple literacies, stating, "If students are to use new media to their own greatest advantage, they too must learn to creatively and critically browse, research, organize, select, and produce communication forms that use the full spectrum of literacy tools available to them" (374). The second half of Kellner's critical media literacy - media production - stresses the need for ICTs and new media to be used in the service of "self expression and social activism" (93).
10. Yet another widespread assumption about new media and computer usage is that digital technologies are necessarily atomizing and isolating in nature. Flichy argues against this solipsistic view, stating computer use "is characterized by a high level of sociability within peer groups. Young people exchange software and various tips for more efficient use of hardware and software. Video games are often played collectively" (146). New media consumption *and* production can and should be a shared activity. According to Kellner, "teaching critical media literacy could be a participatory, collaborative project. Watching television shows or films together could promote productive discussions between teachers and students (or parents and children) with emphasis on eliciting students' views, producing a variety of interpretations of media texts and teaching basic principles of hermeneutics and criticism" (94).
11. However, designing and implementing these proposed digital learning environments is anything but easy. "The problem is that applied, directed, and delivered pedagogies dominate the curriculum, leaving little breathing room for reflective, inquiry-based, student driven, and experimental processes that are the central operating principles for critical literacy practices" (Tyner 380). The old tension between traditional versus constructivist pedagogies hounds attempts to integrate new media literacy into

existing educational programs. Moreover, new media texts have been maligned as low-culture entertainment, and irrelevant to the educational goals of most curricula. "For example in the United States ... there is still hesitancy about media's institutional legitimacy alongside, say, classical literature ... These concerns reflect the values of high culture or tradition" (Means Coleman and Fisherkeller 346-347). Robert Kubey argues that this sort of cultural snobbery, "will increasingly fall away as film and television gain the greater respectability and patina that nearly always attend the assessment of any art form with the passage of time" (366). This paper contends that the false dilemma of high culture versus low culture is perpetuated by conservative ideologues seeking to reduce the discussion to a morally charged Manichean debate of "good media" versus "bad media." This straw-man argument effaces the different forms of new media, and how they may operate in various contexts. Furthermore, new media need not undermine the goals of traditional print media. In fact, it should be used to do just the opposite. "It is a mistake to advance an either/or logic of print literacy versus computer literacy, or to privilege books over new media, for both can enhance education and life and require different literacies" (Kellner 100).

### III. VIDEO GAMES: A NEW MEDIA LITERACY

12. Video games have received the newest brunt of the "moral panic" surrounding possible behavioral impacts of new media technologies. The resistance to video games as educational tools is framed first by a general opposition to them as cultural artifacts. Mirroring the outcry over television before it, video games have been labeled as little more than pernicious entertainment that either pacifies users or (strangely enough) excites violent tendencies<sup>3</sup>. However, what many studies fail to acknowledge, or make sufficiently evident, is that games are not created equal. Imagine an equivalent situation in print culture. How would books be perceived if they were discursively positioned as being uniformly pornographic or excessively violent? We know that this is not the case, so we specify what *kind* of printed work we are discussing, what genre it belongs to, and what it is being used for. The general lack of specificity and the failure to contextualize gameplay has resulted in an incomplete and partial view of video games, even among academics. David Buckingham argues that one of gaming studies' major roadblocks on its path to academic credibility are the academics themselves:

The experience of game playing requires a great investment of time, and no small amount of expertise ... They [scholars] have been inclined to generalize, without making the fundamental distinctions between different genres or discussing particular games in any detail; they have concentrated on relatively superficial visual characteristics of games,

without discussing the experience of game play; and they have imported conceptual and methodological approaches from studies of older media such as film and television without paying sufficient attention to the unique characteristics of the new medium. (80-81)

Indeed, the split in the academic community over the legitimacy of studying video games is wide and contentious, thus appearing as its own kind of digital divide (Carlson).

13. Few researchers have studied video games as a means for advancing new media literacies, even as links are being made between other ICTs and digital literacies<sup>4</sup>. Ventures into video game education are complicated by the absence of any established hermeneutic for reading these texts as cultural artifacts. However, educators should not wait on textual analysts to weigh in before asking if these interactive texts can serve the cause of new media literacies. An investigation of the video game form reveals particular operational characteristics that promote user agency, provide a variety of epistemic viewpoints, allow for self-expression, and offer opportunities for social networking, all of which *can* facilitate the adoption of a critical literacy. Moreover, video games that conscientiously embrace and incorporate these design elements can advance critical media literacies by teaching users how to read and articulate through gameplay. Before describing three recent video game projects that support critical new media literacies, I will describe four characteristics of the video game form that should be exploited for educational ends.

#### **A. Simulated Agency**

14. All video games are simulations, but not all simulations are video games. For example, the football game, *Madden 2005*, is a sports simulator; whereas, an air traffic controller simulation is hardly a game. Gonzalo Frasca clarifies the difference between games and simulations, stating, "video games are just a particular way of structuring simulation, just like narrative is a form of structuring representation" (224). The "agency" in this term denotes the degree of choice or freedom enjoyed by the gamer within the simulated world. A player's agency, or meaningful action, within a game is never as free or open-ended as it is in the real world. However, as simulations, video games encourage repeated play and hold out an infinite number of variable futures to the player. "Games always carry a certain degree of indeterminacy that prevents players from knowing the final outcome beforehand. To paraphrase Heraclitus, you never step in the same video game twice" (Frasca 228). Games are models through which players witness their power of their choices. The video game form showcases that the user's decisions have impacts and results, and are more than

simulations alone - games have rules, and games have goals. In order to succeed or advance, players must design, adopt, and modify a variety of game tactics that abide by the game's operational logic.

15. Working out your game strategy involves a process of deciphering the logic of the game, of understanding the intent of the game's designer, of achieving a "meeting of the minds" with the program. The video games reflect the computer within—in their animated graphics, in the rhythm they impose, in the kind of strategic thinking that they require. This "computational specificity" becomes clear when you contrast the games with their "grandparent," pinball. (Turkle 502)
16. Stuart Hall's (1980) "encoding/decoding" model meshes nicely with Turkle's notion of "computational specificity." Unlike traditional one-way media, video games provide quick, action-specific feedback (e.g., if you push the wrong button at the wrong time, you lose). Using Hall's terminology, in-game success is predicated on how well a player is able to decode a video game's "preferred" reading of its rules. Again, game simulations offer *more* than a demonstration of different choices leading to different narrative endings (something that the "choose-your-own-adventure" books have done for some time). Simulated agency highlights that gameplay *itself* is embedded in a specific system of rules. Therefore, changing game titles is more than changing stories. Selecting a different game changes the way the player interacts with that textual world, and thus changes the gameplay adopted by the user. "Narrative may excel at taking snapshots of particular events but simulation provides us with a rhetorical tool for understanding the big picture" (Frasca 228). The big picture, or the game's *epistemic frame*, is the second necessary quality of a critical video game.

### **B. Epistemic Frames**

17. The term *epistemic frame* is borrowed from, "Video Games and the Future of Learning," by the education scholars at the University of Wisconsin at Madison. This group's other contributions will be discussed in a later section. In the abstract for the aforementioned paper, Shaffer et al. state, "that video games matter because they present players with simulated worlds: worlds which, if well constructed, are not just about facts or isolated skills, but embody particular social practices. Video games thus make it possible for players to participate in valued communities of practice and as a result develop the ways of thinking that organize those practices (2). An epistemic frame, then, is a way of describing the way(s) in which a group of people or a culture thinks or knows their world. To view the world through a particular epistemic frame, a person must be immersed in that specific spatial and cultural context. These scholars argue that video games are compelling virtual worlds that present their own identities, values, and



physics and, therefore, operate as epistemic frames. Clearly, no game is capable of representing 'the real world' perfectly. And even with amazing technological advances, multi-modal texts are necessarily different from the real world. That said, by studying a culture or group's epistemic frame, one can nevertheless locate certain practices central to that way of knowing and replicate them in a simulation. "The result is a video game that preserves the linkages between knowing and doing central to an epistemic frame—that is, an epistemic game" (Shaffer et al. 11). The notion of the epistemic frame is essential to critical media literacy because it posits that a person learns within a site-specific context. If games utilize a variety of different epistemic frames, then the opportunities to change a gamer's point of view, and ways of learning, are multiplied.

### C. Embodiment

18. Speaking to users' expressions of video game embodiment, Turkle observes that "although it has become cliché to speak of the video game as 'interactive,' players describe the experience of being with one as less like talking with a person and more like inhabiting someone else's mind. Conversation gives way to fusion. In pinball you act on the ball. In *Pac-Man* you are the mouth" (502). If epistemic frames are about ways of seeing, then embodiment is about ways of being. Embodiment is understood here as any psychological condition that results from a physiological state of being.<sup>5</sup> Therefore, a game's epistemic frame has a significant impact on how players relate to the game, and in turn, how they relate to themselves and to the real world.<sup>6</sup> The most influential work on embodiment and literacy is James Paul Gee's *What Video Games Have to Teach Us About Learning and Literacy*. Like this paper, Gee's work does not blindly celebrate games but stresses the potential of the video game form. His work privileges immersive game environments as the preeminent interactive design type because this digital configuration best enables the user's contextualized presence. For instance, a 3-D *Grand Theft Auto*-type game is a far better text for Gee's purposes than the arcade classic *Pong*. His notion of "semiotic domains" is central to understanding how simulated embodiment facilitates specific types of literacies. For Gee, "To understand or produce any word, symbol, image, or artifact in a given semiotic domain, a person must be able to situate the meaning of that word, symbol, image, or artifact within embodied experiences of action, interaction, or dialog about that domain" (24). If "real learning is active and always a new way of experiencing the world," as Gee contends, then video games provide specialized and individuated opportunities for gamers to situate and contextualize meaning, and to reflect on the learning process itself (26). Not only does the video game form emerge as a venue for a singular semiotic domain, moreover, every game title carries with it the potential for a new semiotic domain or domains.

19. Semiotic domains have two levels of “design grammars,” which are the symbolic and social cues that tell us what is and is not acceptable content for a specific semiotic domain. The two levels of design grammars are: *internal* (the symbolic within the semiotic domain) and *external* (the conventions in real-world social practices) (30). The internal design grammar is the symbolic logic built into the multi-modal game text. Meanwhile, the external design grammar are the myriad social practices and behaviors that are established around gameplay in the real world, which are usually established, policed, and reinforced by an “affinity group” (27). My own research into competitive LAN gaming supports this multi-layered view (Payne and Slimmer). For example, during *Counter-Strike* LAN tournaments, I have observed teammates communicating with one another through the game’s internal grammar (e.g., by tagging objects), just as they communicate outside of the game (e.g., talking, yelling, clapping). Embodiment then is not solely about the player’s physical relationship to the simulated semiotic domain, but it is also influenced by the user’s social relationship to gameplay and fellow game-players. The external semiotic domain of communal play brings us to our fourth and final critical characteristic.

#### **D. Community Participation & Fandom**

20. A surprising amount has been written on the positive, communal aspects of real world and virtual world gameplay. More generally, much of contemporary cultural studies scholarship<sup>7</sup> has worked towards rescuing popular entertainment commodities from their bad media notoriety – a label promulgated by moral conservatives and liberal cultural elites alike. I will not belabor this point, except to reiterate that the “morality issue” is, at best, a remotely tangential issue to this paper’s concerns.
21. According to J. Douglas Storey, “Popular culture is not something one can readily manipulate, even with concerted effort. Instead, popular culture is something in which one can participate” (346). As popular entertainment commodities, video games have generated a rich participatory fan culture that expresses itself in offline arcade culture, in CosPlay (or “costume play”) at fan conventions, and in online forums (Payne). Mia Consalvo writes on the “walkthroughs” authored by gamers for gamers. “Walkthroughs” are written explanations on how to progress through a game’s different levels. Consalvo argues that:

Games are not played in a vacuum. Gamers consult walkthroughs ... They also talk to friends about the game and troublesome areas or about ways to find all of the secret treasures hidden in the various worlds. They do not, just as television fans do not, discard knowledge of all other media while engaging with a primary

text. Rather, they approach all of these media intertextually, with knowledge of all informing all of their actions. (331-332)

Again, this real-world interactivity connects to Gee's external level of a simulated semiotic domain. Learning how to read new media forms from others is as important as learning how to read from a specific textual source. Because of video games' mass popularity, educators have the opportunity to embrace a new media form that fuels an enthusiasm that often results in users crafting their own media - a practice that strongly accords with Kellner's critical media literacy perspective. It is outside the purview of this paper to recommend specific fan-inspired educational projects. I only mention it as a possible literacy enriching strategy, one that promotes user authored works, and establishes a user-centric dialog. At her conclusion, Consalvo admonishes fellow researchers to "consider how gamers make sense of games by asking and observing them—rather than wonder what games are doing to them as they passively consume them. Games are fundamentally more active than television viewing, and gamers' intertextual use of media forms demands that researchers consider more than just pixels on the screen when considering video games" (332). The following educational video game projects have thankfully heeded Consalvo and likeminded critics' pleas to keep the video game form and the social nature of gameplay in mind when designing research and game projects.

#### **IV. THREE CRITICAL VIDEO GAME DEVELOPMENT PROJECTS**

22. Over the past few years, scholars, artists and educators have initiated a number of development projects with the explicit aim of designing, producing, and arguing for a new breed of educational video games. Though there are doubtless more projects of this kind, this paper will focus on three recent attempts to promote the educational potential of the video game form in the US. The best-publicized attempt to fuse criticism with design is MIT's *Games-to-Teach* program, now *The Education Arcade*, led by media scholar Henry Jenkins. The second intervention is the *RAPUNSEL* project, headed by new media artist Mary Flanagan. Finally, the paper will look at the recent academic efforts by the group, *Room 130*, a consortium of education scholars at the University of Wisconsin at Madison. These three initiatives are similar in that they share educational goals, information technologies, some core literature, and in some instances, personnel. Yet, their motivations are noticeably different. In fact, what makes this assemblage interesting is that they have arrived at a common pedagogical destination, having started from such professionally disparate backgrounds. After enumerating their common features, this paper will focus on how their key differences, borne of their institutional and interpersonal contexts, inform their various routes to a

common, pedagogical goal.

23. Unfortunately, these projects' rates of maturation often hinge on the availability of provisional funds, thus rendering many of these early efforts "works in progress." The novelty of these initiatives and their still-unfinished texts complicate this paper's efforts to provide a thorough and final project review or textual analysis of their yet-to-be-published games. Therefore, the following analysis is conditional, recognizing that any attempt to distill these projects' shared and/or individual characteristics is necessarily based on recent publications and the projects' online representations.
24. The three selected projects share the following characteristics: (1) interdisciplinary personnel; (2) a commitment to praxis; (3) a belief in the transformational / educational potential of video game form; and (4) exploiting the WWW to disseminate information and facilitate dialogues.
25. Educational video game development professionals are an interdisciplinary hodgepodge of computer science engineers, education specialists, media theorists, new media practitioners, and artists. As the nascent discipline of a much-maligned cultural artifact, there are understandably few departments that are exclusively dedicated to the study of video games<sup>8</sup>. According to *The Education Arcade's* website, it "represents a consortium of international game designers, publishers, scholars, educators, and policy makers who are exploring the new frontiers of educational media that have been opened by computer and video games" (MIT & Microsoft). Likewise, *Room 130* is "an interdisciplinary faculty, student, and industry consortium devoted to research in the areas of digital games, game design, and digital cultures..." building "meaningful cross-industry and cross-institutional collaborations involving learning sciences faculty, game designers, government and industry leaders, and experienced teachers" (University of Wisconsin at Madison).
26. As multi-disciplined interest groups, praxis (understood here as game theory and production) is stressed as a means of bridging existing new media literacy divides. *The Education Arcade* claims their mission is "to demonstrate the social, cultural, and educational potentials of games by initiating new game development projects, coordinating interdisciplinary research efforts, and informing public conversations about the broader and sometimes unexpected uses of this emerging art form in education" (Education Arcade). Similarly, in *RAPUNSEL's* manifesto, Mary Flanagan states, "We embrace the responsibility of the scientist/designer to make the world a better place" (Flanagan). The groups' dependence on praxis tacitly acknowledges that technologies are always socially engineered and, as designers-creators, that they are responsible for the simulations they create.

27. The third characteristic that these groups share is a belief in the educational potential of video games. Yet all three groups are quick to dismiss video games as a technological panacea. For example:

Room 130 seeks to provide empirical, investigative data, as well as theoretical accounts on the nature of learning and literacy in these contexts from the perspectives of humanities, education technology, second language acquisition, cognitive psychology, learning sciences, linguistics, and critical pedagogy. ( University of Wisconsin at Madison)

Meanwhile, Mary Flanagan's *RAPUNSEL* project seeks to:

...improve learning by contextualizing concepts and problem solving inside structures which will give a base for making abstract problems "real." We want to facilitate learning through play systems which invoke peer to peer interaction, sharing, and instant feedback... We are designing systems which strengthen each child's role in an ever-growing digital environment. (Flanagan)

"In short, we want to lead change in the way the world learns through computer and video games" (MIT & Microsoft).

28. The final common characteristic is that these groups enjoy well-developed online identities with multimedia samples of their projects, research papers, and, in some cases, discussion forums. The new iteration of MIT's 'Games-to-Teach' program, *The Education Arcade*, Mary Flanagan's group *Tiltfactor*, the University of Arizona's *Learning Game Initiative*, and *Room 130* (see, MIT & Microsoft; Hunter College; University of Arizona; University of Wisconsin at Madison) effectively exploit the Internet's communicative and information storage and sharing capabilities (e.g., game mockups and prototypes, discussion forums, audio and video).
29. Although similar in their pedagogical tone, these collaborations have produced markedly different kinds of works that reflect both their institutional settings, and the interests of their authors and financiers. Henry Jenkins and the *Games-to-Teach / The Education Arcade* project have produced works that embody "contemporary pedagogy + state-of-the-art gaming = next generation educational media" (MIT & Microsoft). Mary Flanagan's *RAPUNSEL* project represents her artistic politics, as well as her explicit concerns for the gender divide in the math and sciences. Meanwhile, the *Room 130* group has compiled research literature advocating the need for video gaming studies and literacy from an educator's point of view.

30. Because of its financial backing and institutional locale, many consider the *Games-to-Teach* project to be the apotheosis in educational gaming development. The project was backed by Microsoft's 'iCampus' initiative, and run through the Comparative Media Studies department at MIT. In all, they produced 15 game concepts that supported math, science, and the humanities education.<sup>9</sup> One cannot help but be impressed with the proposals' technical sophistication and alleged game play capabilities. As the title of their chapter suggests, these game proposals represent an effort to achieve 'theory by design.' Jenkins and his fellow authors describe the project's initial, exploratory stage, explaining that the games "are in a very real sense theoretical – games that might exist, someday, but whose current value lies in the questions they pose and the directions they point for future development" (Holland et al. 30). The next step for these researchers is to develop and test the games with children and adult players. The reception of these games is clearly the most important indicator of success for these theorist-designers. Regardless of the success or failure of these early prototypes, Jenkins is confident in the video game form, stating, "If children are going to have opportunities to play, play that encourages cognitive development and fosters problem-solving skills, they will do so in the virtual environment of games. Multi-player games create opportunities for leadership, competition, teamwork, and collaboration" (Jenkins 120). He also contends that, "Computer games are art – a popular art, an emerging art, a largely unrecognized art, but art nevertheless" (117). Moreover, he believes that games need to be popularly reconceptualized as art because they are quickly "shaping the aesthetic sensibility of the 21st century" (118).
31. Seeing video games as art is nothing new for media artist and Hunter College professor Mary Flanagan. She has created games as installation pieces for art galleries and produced educational software. In addition, she designs digital 'navigable narratives' (her own label), and heads *tiltfactor*, whose mission is "to promote research, scholarship, and creative work centering around computer gaming and digital culture, with an emphasis on the social impact of digital technology" ( Hunter College). Most salient to this discussion is her recent game project, *RAPUNSEL* (or, Realtime, Applied Programming for Underrepresented Students' Early Literacy). According to the *RAPUNSEL* website, "The purpose of this three-year research project is to build a successful software environment ... in order to address the critical shortage of women in Computer Science (CS) careers and degree programs" (Flanagan). Furthermore:

Recent educational surveys show that children still see computer programmers in stereotypical terms: the image of computer programming in contemporary culture is troubling. Media portrays images of loner, "geeky guys" immobile in front of their

machines. We have images in our heads that computer scientists work alone, churning out nonsensical terms, reducing the world into equations... But we know that computer science is a creative, expressive, team-oriented and very often fun and challenging field. (Flanagan)

Flanagan engages social inequities, in part, through creating video games, which are colored by her politicized artistic practices. In a piece in *Art Journal*, Flanagan opines the ways in which art can be mobilized to reveal our basic assumptions about gender. She states, "If we can reveal the process by which gender is produced - partly through the concept of performativity and partly through the technological apparatus used to create the work and its embedded ideologies - then we may also be able to reveal the processes through which ideas about space and their tie to gender are produced" (Flanagan 81). *RAPUNSEL* is a game that teaches girls and young women how to write computer code. It is designed as a multiplayer game that utilizes "peer to peer interaction, sharing, and instant feedback" thereby allowing and encouraging youngsters to play together while using math, science, and technology. As a game, it achieves a level of comfort that turns its female users onto vocations that have been historically dominated by men. "We are working to increase comfort level with technology by making programming a part of everyday life" (Flanagan). Flanagan's game project is clearly connected to her social and political responsibilities as an artist. "This challenge to the digital teller / told or storyteller / listener relationship offers a fissure at which new ways of identification in storytelling, especially for women and disadvantaged or disenfranchised groups, can develop" (Flanagan 81). Her recent game project poses a far less esoteric question. Germane to our topic, the game's website asks, "What would happen if everyone in the US learned how to read and write English?" (Flanagan). Programming, as a form of digital writing, is a kind of new media literacy. These new media literacies are of primary concern for the third group, *Room 130*.

32. Unlike the previous developers, *Room 130* is less concerned with immediately producing games. Instead, this "interdisciplinary faculty, student, and industry consortium devoted to research in the areas of digital games, game design, and digital cultures" has focused its sights on establishing credible links between video games and the learning sciences. Thus far, the *Room 130* collaborative has, over the past two years, published the lion's share of the academic literature connecting video games to cognition and learning. In collaboration with the Academic Advanced Distributed Learning Co-Lab (or the ADL Co-Lab), also based at the University of Wisconsin at Madison, the *Room 130* scholars (e.g., Kurt Squire, David Williamson Shaffer, Richard Halverson, James P. Gee, and others) will soon follow MIT's Games-to-Teach path, and try

their hand at designing their own epistemic games. Their website states:

Real innovation in game-based learning demands partnerships that span government, industry, and the academy, and GAPPS (Games and Professional Practice Simulations) is committed to building them. We value what different groups bring to the problem of designing good games for learning and believe that to move forward, game designers cannot work alone. We must build on a decade of research and experience in the games industry and the learning sciences. (The University of Wisconsin at Madison)

As it was covered earlier, the group's key contributions to gaming studies discourse has been the notion of video games as 'epistemic frames' and as a vehicle for literacies.

33. Epistemic video games provide educators with a potentially revolutionary teaching tool that can advance multiple new media literacies (Flanagan's RAPUNSEL project is but one such example). These new literacies, with the right pedagogical support, promise to arm students with the critical tools necessary to engage both canonized and popular texts alike, and not simply regurgitate rote information for the purposes of passing standardized tests. Video games might:

...move our system of education beyond the traditional academic disciplines, derived from medieval scholarship and constituted within schools developed in the industrial revolution, and towards a new model of learning through meaningful activity in virtual worlds as preparation for meaningful activity in our post-industrial, technology-rich, real world (Shaffer et al. 19).

And this is precisely where *The Education Arcade*, *RAPUNSEL*, and *Room 130* come into play.

## CONCLUSION

34. Robert Kubey opines, "The United States finds itself in the ironic position of being the world's leading exporter of media products while simultaneously lagging behind every other English-speaking country in the formal delivery of media education in its schools" (352). One of the necessary first steps towards fixing this immense failure is to push past the moral Manichaeism that has plagued the new media texts and technology debates. We should also recognize that mini digital divides are built into every new ICT. To adopt an ICT, one must have access to it and the skills to make its use meaningful. It stands to reason, then, that the faster we progress towards the so-called network society, the more quickly we leave non-ICT adopters



behind. Therefore, new media literacies need to be a centerpiece of educational curricula, not an afterthought. Moreover, as Kellner and Tyner make clear, new media literacies should also have a critical component that stresses the value of textual hermeneutics and media production. "Media education needs to encourage critical analysis, production, and new forms of communication that can help all of us imagine as well as implement systems that employ and encourage equal access, opportunity, expression, and power – systems that do not currently exist" (Means Coleman and Fisherkeller 348). To this end, the video game form houses specific characteristics that can assist learning processes. Video games have rarely, if ever, been framed as being of possible benefit to the ICT usage and skills divide. Yet, the three selected video game-related projects demonstrate a myriad of literacies that video games could be constituted to support. Moreover, these groups are all working towards ameliorating various ICT divides. *The Education Arcade* is addressing the gulf between popular and educational game titles. Flanagan's *RAPUNSEL* project works to familiarize young girls with a programming language, thereby addressing the gender gap in the IT work force. And, the work of the *Room 130* group addresses the gaping hole in video game scholarship. Seen this way, video games not only have something to say about learning a new language, they also have the *potential* to bridge existing techno-social inequities, and those still to come.

### Notes

1. For a thorough overview of these groups, see Rice.
2. See also, Mosco and McChesney.
3. For a comprehensive review of the empirical literature on video games and violence, see, Dill and Dill.
4. Livingstone and Mitra look at children's uses of the Internet. The work of Niesyto et al. researches students' adoption of video production practices.
5. McMehan (2003) offers a precise conceptualization of the related terms: immersion, engagement, and presence.
6. For a compelling empirical study, see McDonald & Hyeok's (2001) report, which shows children's close identification and personal ties with video game characters.
7. The following citations are illustrative, not exhaustive: Morley, 1978; Hebdige, 1979; Radway, 1984; Ang, 1985; Bennett, 1987; Denning, 1987; Fiske, 1989; Jenkins, 1992.
8. The winds are changing. USC recently got its first endowed chair in video games.
9. The game prototypes are available for viewing at: <http://www.educationarcade.org/gtt/>

### Works Cited

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