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Making games for social change

Received: 18 May 2005 / Accepted: 19 August 2005 / Published online: 11 April 2006
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Abstract This paper provides an overview of creating games for change from within an academic context, focusing specifically on the development of educational computer games for middle school girls. The essay addresses larger issues such as the cultural importance of computer games, the difficulty in categorizing a diverse user group such as “girls,” and the ways in which one could design game goals to promote diverse play and learning styles. Through such alternate design strategies, both media makers and students can incorporate significant social intervention into media work.

Keywords Values · Game design · Education · Computer games · Software

1 Educating for change

One of the most important ways an instructor in electronic arts can teach his or her students to become socially responsible designers is through providing real world contexts. By this I mean not only supplying students the examples of socially responsible decisions involving projects in interactive work, advertising, or software design for example—decisions in existing projects—but also by putting students in situations (through studio, critique, or practicum) where they must create work, weighing their own decisions through their creative or technical work in relation to social values.

The idea that values may be embodied in technical systems, devices, artifacts, and processes has taken root in a variety of disciplinary approaches to the study of technology, society, and humanity (Winner 1986; Latour 1992; Hughes 2004; MacKenzie and Wajcman 1985). The creation of technology is embedded within the ways in which people might interact with each other or view the world, after all. Therefore, creating software is in essence creating worldviews and worlds, and these constructions embed the idea of values into the technological systems. Fortunately, there are several practical examples of social values being integrated into design projects. There are, however, more software tools incorpo-

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rating social values than there are games. Netomat, for example, is a company with a net-based product of the same name which holds social values such as authorship and democracy within both the structure of the company and in the product. The company is financed by a unique combination of venture capitalists, foundations, and individual investors reflecting the company's foundation in art as well as its belief that technology is not neutral and should provide both a financial and cultural return (<http://www.netomat.com/>). Another software example is the UK/Canadian recording label Fading Ways, which was founded using the Creative Commons copyright approach out of a personal philosophy of "fairness" centered around particular philosophical theories and the founders' beliefs (<http://www.fadingwaysmusic.com/>). Games provide fewer of such examples. One, however, is a game created by NetAid, a nonprofit organization whose aim is to eliminate poverty. NetAid is one of the few activist and nonprofit groups at this time creating games. Partnering with Cisco Systems, NetAid created the Peter Packet game in which players learn about children in less developed countries, and send superhero Peter Packet to move messages on the Internet to those in need. The game explores the issues of education, clean drinking water, and AIDS in Haiti, India, and Zimbabwe through the use of computers and specifically, the Internet. Players help Peter Packet dodge viruses and hackers in order to help the in-game characters communicate with international contacts such as teacher organizations. By interacting, the players not only find out about computer networking such as routing messages, but also learn about contemporary situations regarding technology, educations, health, and poverty around the world. The game also offers players and their friends a chance to learn more about fundraising and taking action to help in the related causes (<http://www.peterpacket.org>; Fig. 1).

These research initiatives and activist projects do embed values into systems, generally through the process of design. In this paper, design is presented as a



Fig. 1 A scene from NetAid and Cisco's Peter Packet game

wide category: design of company structures, the design of a technology or software architecture, collaborations, or the design of any kind of planned construction of computer-based artifacts. It is this process where real world projects involving activist intentions come into play. By faculty and students creating games in an academic context, students can become integrally involved in such a project from concept to completion. In this paper I will detail such work on a computer game-based research project, *RAPUNSEL*: a project with the goal of teaching middle school girls how to program.

Games are important for electronic artists and technologists interested in social change for a variety of reasons. First, computer games are part of a larger cultural phenomenon. Computers themselves have permeated almost every level of contemporary social life, and they influence mass media such as music and film. Information technology has provided international career opportunities that rely on computer science, engineering, and other scientific disciplines as well as creative ones, and as a collection of disciplines has helped the technology sector exceed Moore's Law. As a capitalist affirmation of "digital culture" in North America, the computer gaming industry is at least in the league of the Hollywood film industry's box office sales: computer and video game sales represented nearly a seven and a half billion dollar industry in 2005 (ESA 2005).^{1,2} From online shopping to single player experiences like *The Sims* games to online, multi-person activities such as *eBay* auctions or the game *Ultima Online*, participants in everyday digital culture spend a great deal of dollars and hours online. Americans spend more time playing computer games than watching television, and this clearly signifies that computer games are at the forefront of defining culture in leisure time from within the home (Quittner 2001). In fact, the popularity of computer games suggests a cultural revolution. Computer artifacts, over cinema, television, literature, and sport, are at the forefront of defining culture in the West and perhaps in Asia and Africa as well (Poole 2000).

Second, because of this popularity, computer games are of course specifically relevant to students in electronic arts. Even if a student has no interest in working in the games industry, many students play games or have friends who do. They are knowledgeable in the tools of the trade, and if they work in areas as diverse as installation or screen-based work, they draw upon interaction conventions which are, in part, influenced by gaming conventions. The students also understand how much games affect culture and are often the leaders in integrating various aspects of learning, for example, with technology.

Finally, online environments such as *Second Life* and online games such as *Everquest* constitute public spaces. Thus, drawing upon a history of artistic intervention, artists participate in a tradition of intervention into public spaces for social change. Artists practicing intervention works toward social or political ends and often seek to open up dialogue by transgressing the boundaries between art and everyday life. Most twentieth century art movements fostered some kind of interventionist activity, and such artistic intervention has been

¹The figures in this paper and the cultural trends discussed are focused on the United States. However similar trends (the popularity of games, the growth of the industry, and the non-participation by women) are tendencies in many other nations.

²In contrast, the film industry ticket sales were just 7.7 million in 2000 (AP 2001).

traditionally aligned with the historical avant-garde, whose loose goals were to bring about private and public transformation through creative acts.³ Finally, contemporary electronic artists negotiate from traditional, institutionalized esthetic discourses and emergent, organic forms of social communication. Electronic art has become an experimental laboratory, not so much for new technology as for new social relations of communication (Wark 1995).

2 Gender + tech

In the last decade there has been a great deal of interest in the area of gender and gaming, especially among United States academics and games industry workers. On the one hand, female characters in games are flourishing, with slutty monsters on the attack and tough girl heroines or harlots proliferating in action, adventure, and first person shooter games. On the other hand, women are only narrowly involved in the creation of computer games.

The popularity of online networks, peer-to-peer exchange, and gaming suggests a cultural revolution (Sandler 1993, pp 89–91). The gaming industry is at the forefront of this cultural cycle. It has long been argued that men and boys are the primary target of video game marketing campaigns, with much of the marketing and design of computer games still being directed at white males (Oldham 1998); yet even 8 years later, Douglas Lowenstein, the president of the Entertainment Software Association, noted at the annual E3 gaming conference that “we need a cultural shift so that young girls and women feel that playing games is not a testosterone-monopolized hobby reserved for their boyfriends and husbands” (Hermida 2005, par 14). As gaming drives the development of new technology, and new technologies already possess strong associations with masculinity, the cycle of technological innovation and entertainment help to keep the definition of high-tech areas as male domains. Computer games and online computer networks appear to reproduce technoculture as a male space and games as a male-centric place within it. Gaming industry insider Lowenstein has argued, “our own industry, mainly through our marketing practices, reinforces the stereotype that most gamers are men” (Hermida 2005, par 11).

The computer is a portal to digital culture, however, not just a tool. This portal is useful—perhaps essential—to women and girls, who are at an unequal position in terms of technological experience and ranking in technological fields. These

³Thus some artistic intervention takes the form of performance, parody, simulation, game, activist, and “hactivist” strategies. For over a century, artists with strong ideologies have utilized the “manifesto” to communicate a group goal (such as the futurists, with Marinetti 1909, or the surrealists, with Breton 1924, 1971). A number of artists have used interventionist strategies, especially women artists. Women artists have functioned as outsiders in both overall culture and The work of Dada artists such as the radical street performer Baroness Elsa von Freytag-Loringhoven (Hjartarson and Spettigue 1992; Gammel 2003), and Hannah Hoch (Kimmelman 1997; Ollman 1998); Surrealist artists Maya Deren, Djuna Barnes, and Claude Cahun (Martyniuk 1998; Rice 1999); Gutai artist Atsuko Tanaka (Munroe 1994; Tanaka and Kanayama 2004); and Fluxus artists Yoko Ono (2000), Jenny Holzer (1998), Suzanne Lacy (Fisher 1997), and collectives such as Paper Tiger TV all activated social, public spaces, intervening in contemporary art venues and the street to change them. Intervention was a popular strategy historically with street performers and activists: feminists reworked theatre practices and turned to street theatre for intervention (Goodman 1993).

facts are critical for students in media design programs to engage with, for they are learning how to design new interfaces and interaction experiences. Women and girls consistently report a lack of confidence in their computer skills (AAUW 2000; Orenstein 1995; DOERI 1997; McLester 1998; Furger 1998; Carter and Jenkins 1999; Wilson and Shrock 2001; Honey et al. 2002). Computer scientists Margolis and Fisher (2001) document how women are avoiding computer studies and careers. Facts from the training grounds of computer experts also support this claim. The number of female assistant professors of computer science in the United States has dropped significantly since 1997—women in the assistant professor line are now barely 15% of the overall makeup of computer science faculty in the country, with smaller numbers in higher academic ranks, and 18% of United States undergraduates in computer science are women (Taulbee 2002). Although women constitute roughly half of the US population, they are significantly underrepresented in computer science degree programs and professions (Pearl et al. 1990). In 2004, the US National Science Foundation reported that only 7% of working programmers in the field were women, and the overall science, engineering, and technology workforce is only 19% female (CAWMSET 2000). These figures support the idea that there is an imbalance in gender in the creation of computer artifacts. New technologies tend to be created primarily by men, and generally, for men. A mere 10% of all game industry workers in the US are women, and most of these are not working hands-on in the architecture or design process; in other words, even fewer of this number are programmers and engineers (Hafner 2004). Overall, women in the software industry have little voice in what content, interaction styles, character representation, and reward systems go into games, and this affects what is created and how such games are perceived.

Gaming is thus as linked to new technology development and computer science as it is to popular culture, and because of this intersection, offers a powerful site for generating social change.

3 Categorizing “girl”

Media theorists confer regarding the gender imbalances in electronic culture: in addition to industry figures, critical theorist Jenkins (1998) among others, notes that video game spaces are gendered spaces (1998). Digital worlds are great importers of content from the real world, including negative social constructions such as racism and sexism. Games thus far offer stereotypes for consumption, especially in regard to gender, race, etc.

A central difficulty, however, in challenging gender stereotypes inherent in computer culture is that one may inadvertently create new problems. Categorizing “girls” together in a group is certainly a problematic effort for which there must be a clear reason to do so, such as working overall for gender equity issues science and technology. Attempting to create something for “girls” as a category obviously navigates a dangerous border zone between personal, specific, lived experience, and generalization. “Girls” are as diverse in their interests, abilities, and tastes as any other category of people (e.g., “students” or “the French”). In designing for gender equity, designers must be able to work toward the goal of gender equity without falling into stereotyping traps; in this they must realize the inherent breadth and contradictions of categorization.

The goal of a solid approach to design for gender equity is to design for a multiplicity of experiences, parts of which could be co-opted or rebuilt entirely by the users. Focusing on a few of the broader interests expressed by girls involved in a particular endeavor, then, may help diversify all kinds of game goals and address numerous play styles. Therefore, one way to address designing for girls is designing for a multiplicity of play styles and providing diverse thematic content.

4 Real world design example

Wyatt, among others, notes that the possible reasons why so few women choose science-related fields include the lack of female role models, girls' underdeveloped or under-encouraged spatial visualization skills, and learning styles incompatible with the methods practiced by men and boys (Wyatt 1993). Alongside observing the differences in learning styles and role models, we should also look to play styles as a site where meaningful differences might develop in software projects which wish to include girls. Continuing research into middle school girls and educational gaming (see *The Adventures of Josie True*, <http://www.josietrue.com>). RAPUNSEL (<http://www.rapunsel.org>) is an online computer game/learning system research project to enable children, especially underprivileged girls, learn to program computers. It is being developed by researchers at the Tiltfactor Laboratory at Hunter College, New York and the Media Research Laboratory at New York University. The goal of the project is to make a "self-teaching" environment where children are motivated to learn Java programming incrementally through a game environment in which they will be able to master fundamental programming concepts and hopefully transfer this knowledge to situations outside of the project. As computer games, especially online games, are a significant pastime for the target audience, a high quality, socially oriented game space in which programming is an essential skill for navigation, interaction, and advancement, emerged as a robust initial project goal (Kafai 1998).

The RAPUNSEL research is underway and will result in a game prototype in 2006–2007. In the role of game designer, and as the team member most engaged with design partners in schools and computer clubhouses, I observe first-hand aspects of girls' play interests and girls' play styles. So many influences infuse the reading of a game: the local culture, neighborhood, state, school, economic upbringing, family activities, siblings, and lived experiences of the girls involved. In the RAPUNSEL research, the team first surveyed products and experienced already popular with women and girls and compare national statistics and sales figures to what our New York-based design partner group tells us.

To collect information and feedback with the design partners, informal work groups consisting of the team designer (Flanagan), a technical student, and one or two art students visit schools or computer clubhouses. This group works with a pair or two of girls at any one time. The RAPUNSEL team visiting will have specific questions regarding a prototype or design issue, and the girls work with the team, testing and offering suggestions (Figs. 2, 3).

A bit of context is needed on the particular design partners working with the RAPUNSEL team. On a national level, games such as *The Sims II* and the



Fig. 2–3 Sims Online, *left*, and some scary Neopets, *right*. Girls report in our design partner meetings that they love scary and macabre aspects of games

Internet-based game *Neopets* prevail with the target demographic. Locally, design partners disclose different preferences. For many of the 11–13 year-old girls we are working with as design partners in the RAPUNSEL research, most girls have never heard of *Neopets*, and favorite games include *Mortal Combat* and the *Grand Theft Auto* series. Almost all of the design partners on the team are African–American girls who live in low income housing in the metropolitan New York area. Households predominantly contain several siblings, and depending on the group, and all have access to one or more game consoles at home or at a friend’s home. Interestingly, girls who report growing up in all-female households have access to fewer game consoles and report playing more off-screen games such as card games and board games. Almost every child we’ve met with (approx. 60 in early 2004) enjoys some kind of game, on or off screen, such as card games (Crazy Eights and Solitaire are popular).

The design partners report that if they were to choose what they wanted in a computer game, they would like action, they want to be challenged, they would like to judge or compete, and they want to be scared. Some participants think that some sort of action, violence, or fighting should be in any good computer game. Extreme situations and narratives seem more popular than traditional kinds of play. However, in every group we work with, there are always a few girls who are attracted to noncompetitive play, such as care giving games⁴ (Fig. 4).

⁴These types of players like to decorate homes in *The Sims* and play games like Solitaire.



Fig. 4 Games favored by the 11–13 year-old design partners in 2004 include the notorious Grand Theft Auto: Vice City

5 Just playing along?

So it seems while some girls still like traditional “girls’ play”, many others prefer more mainstream “masculine” or violent games. But this observation merely scratches the surface. When one probes to ask what girls *do* while they play such games, we find that girls are playing in their own ways. A significant number of girls we’ve worked with play *Grand Theft Auto: Vice City*, which primarily involves stealing cars and killing people. One design partner plays for several hours per sitting upward to three times per week; when asked what she likes to do in the game, however, she (like several other players) responded that she pays no attention to the mission structures in the game, but rather, prefers to “just drive.” Another partner noted that she “wanted to just help people” after her brother went on a rampage with a baseball bat in the game. In some first person shooter games, girls will go off on their own, and test out the virtual body to “see what I can do.” Another theme that emerged over the project is girl’s tendency for subversive play—girls have historically taken on an outsider position in popular games, challenging the status quo through their alternate styles of play.⁵ “Play can cure children of the hypocrisies of adult life,” notes

⁵I look at this type of play as a kind of philosophical subversion, extending the term from other feminists who use Raymond Williams and Antonio Gramsci’s notion of subversion as those behaviors which work against the monolithic structures of “culture” and “state” dominance through hegemony. The feminist work of Kenway (2001) on Gramsci is especially important, for she argues that notions of hegemony can be applied to technology culture; while many postmodernist theorists (Hebdige (1979), for example) have given up on the possibility of anything but an ironic position on the idea of subversion; this stance is in keeping with Jameson’s description of late capitalism and power systems co-opting change into its own matrix so that subversion is simply not possible. Theorists such as Negri (1989), however, and his postmodern Marxism, bolster the possibility of subversion by insisting that there are alternative modes of perceiving and producing social forms and culture. This is a useful proposition when designing activist games.

anthropologist Sutton-Smith (2003); he argues that the earliest forms of children's play, from when children are toddlers to teen years, offer narratives which negotiate the risks of the real world: "These stories exhibit anger, fear, shock, sadness, and disgust."

In the RAPUNSEL design, the themes for the game design center on the balance between collaboration/cooperation, empowerment, and autonomy—creating the most apparent game and learning system possible to teach programming concepts. It is paramount that we actively use the project goals—learning programming—as essential components of the game goals and reward system. The game economy, which focuses on technical, social, and creative currencies in the game system, offers multiple reward tracks.

A brief synopsis of the game is important to look at the game economy. The Peeps game takes place on a dance-driven planet which is populated primarily by two groups of creatures: Peeps and Gobblers. Both groups like to dance because it's just what they do, but Peeps learn their dances the hard way, while Gobblers learn through copying moves from Peeps. These two groups are enemies. Gobblers live in the underworld, while Peeps live primarily in their own "home base." Players control Peeps to become good dancers within short lessons, at first learning short sequences of moves, then saving these and learning progressively more complicated programming concepts such as loops and conditionals to ultimately prepare for dance competitions with Gobblers and with other players in the Underworld. Gobblers intervene, however, threatening the Peeps by stealing their code, or "what they know." While dance is the main theme of the game, it is loosely defined, as moves are also defensive and offensive martial arts, and particular combinations of moves can concoct voodoo like spells which can put a "trance" on Gobblers so players can protect their moves. Players may choose to play along with this narrative in a competitive, "battle" mode of play, or players may also play in an "exploratory" mode, choosing to decorate their home base or make music (avoiding confrontations like the dance competition).

Players are motivated to move to more advanced levels via multiple channels. First, players may wish to rise up in PeepsPoints, creds, and originality stats in the game, and the way to do that is to learn more code and dance moves, save them, and invent great new ones that others will use. Second, players may be motivated to advance in order to earn PeepsPoints and find pods to facilitate home-based decoration and music gathering. Third, players may be motivated to move between levels due to a need to retrieve code from Gobblers. Fourth, social recognition in the system on any number of levels is a strong motivating factor (Fig. 5).

The Peeps game reward system incorporates a familiar, points-based system, but also incorporates alternate reward routes. This combination game economy system was devised to address divergent game goals. First, we incorporated PeepsPoints, which represent the technical currency in the game. PeepPoints are earned through doing the interactive lessons. More the points that the lessons offer for activities the higher is the level of the lesson; therefore, in the introductory levels, points are accumulated very slowly. Points can be gathered up and exchanged for new music loops or editing time in the music editor studio in the underworld, or players can exchange PeepsPoints in the underworld for items to decorate the home base. PeepsPoints can also be exchanged for a Peep



Fig. 5 Screenshot of a work in progress prototype used to see if girls relate characters to programming

in adoption if a player has had all but one of her Peeps kidnapped by Gobblers. Players may also adopt extra Peeps to incorporate them into complicated dances using PeepsPoints.

Second, we incorporated “creds,” or credibility, which represents the social currency in the game. Creds are based on reputation and respect within the game and are earned when a player’s dance or music is used by another player in the system. If someone in the system uses a player’s code (which is watermarked with original author), the originator gets to make new music and saves it in the system. The player’s name is stamped into a saved piece of code. Players post their sequences and characters in the Library, which has a voting forum, and other players rank the moves or dance sequences. This social system of exchange provides a key motivation in the game, as 12.4 million US teenagers use instant messaging regularly, and social software is especially popular with teens (Chmielewski 2004; Palen and Grinter 2002).

Finally, the design involves a reward for creativity. Originality represents the creative currency in the game. The sheer number of unique, modified pieces of saved code in a player’s repertoire constitutes the originality index. Saving any dance move automatically saves it to the public library—players must save into the correct category, etc. However only modified pieces of saved code—things that are not exactly like what the system has given a player—will help the player develop originality points. To reward creativity, players can exchange items on “Abay.” Home-based designs, new music loops, dance moves, and character designs are saved into the shared library, and new players can select to use, for example, someone else’s characters instead of their own once they reach the underworld.

A game’s reward system is a crucial mechanism for expressing the game’s goals and values. In the RAPUNSEL game, designers opted for a reward system that would reinforce larger project goals of cooperation in emerging social

behaviors (Inkpen et al. 1995). In the initial iteration, the team designed a mechanism based upon care giving or nurturing, which they understood to have been popular with the target audience in similarly structured games. Although it was clear that alternate reward mechanisms could successfully teach players the relevant programming concepts and skills, designers preferred the version that would appeal to players' sense of social interaction and achieve higher-level project goals such as cooperation and fair representation (Kafai 1998; Laurel 2001; Margolis and Fisher 2001).

6 Conclusion

Electronic arts, design, and gaming culture merge in these types of alternative game projects. It is my hope that educating students in this hybrid way can also lead to the consideration of social issues into real-world projects. Students working in such a context integrate values considerations into each step of the process and can take these procedures into other disciplines and practices. "We can manifest a different future. And we must. ...It is not enough to simply call for this and then hope for the best; we need interventions at the level of popular culture. Culture workers at their best just make such conscious interventions—mindfully creating technologies that cause us to produce new myths, and mindfully making art that influences the shape of technology" (Laurel 2001, p. 103). Games are an exercise in social engineering mechanisms for such social mechanisms are inherent in the game goals, interaction styles, and architecture of each and every game. Subversion requires the shifting of authority and power relations toward a nonhierarchical, participatory exchange, disrupting our belief in the overly naive picture of social reality that hegemony depends. We can help make systems that change things, and RAPUNSEL design is a step in this direction.

Acknowledgements There are far too many scholars, designers, technologists, teachers, artists, and children involved in both the RAPUNSEL and Values in Design projects to thank them individually; we must extend gratitude to those who are working with us by grappling with value issues, and encourage efforts for larger social change through both theory and practice. I would particularly like to thank each and every member of the RAPUNSEL team for their dedicated work on the project, especially the students team members, the design partners, and Co-PIs Perlin and Hollingshead. The warmest thanks to Helen Nissenbaum for our productive work on values research in game systems. RAPUNSEL is supported by NSF's Program Research on Gender in Science and Engineering, HRD0332898. This material is based upon work supported by the National Science Foundation under Grant No. 0332898.

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