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The Gamification of Virtue Development

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The Gamification of Virtue Development: The Evolving Promise and Potential Pitfalls of Video Game Technology for Teaching and Assessing Virtue

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As a culture we in the United States have an ambivalent relationship to games. While game play is ubiquitous, encompassing 97% of American youth and 58% of all Americans (Lenhart et al, 2008; Entertainment Software Association, 2013), we also have a hesitance borne of the idea that games are frills and a waste of time. Educationally we look to games to do everything from sugarcoating learning ("So much fun kids won't even know they are learning") to providing epistemically rich simulations of career options (Shaffer, 2007). In the mix are a range of game types, including "first-person shooter," action-adventure, role-playing, sports, and others. Parents have a great deal of anxiety when it comes to kids and games, with some looking to nurture their budding programmers by hiring coding tutors (Wise, 2013), and others devaluing and seeking to limit or ban kids' game playing. Within this latter mindset, games are kept on the margins as a frill to be indulged in, but only after the "real work" is done. There are also widespread popular concerns that computer games are a breeding ground for maladjusted, self-centered, and violent kids. Outbreaks of violence such as the mass shootings in Connecticut and Colorado which have occurred in the past few years are all too often linked in the media to the perpetrators' having played violent games. Clearly we as a society have conflicted feelings about games and kids.

Games for adults fare no better in terms of clarity, with both trivial and significant gaming options readily available. Book stores and webinar series tout offerings claiming to "gamify" every mundane transaction, leading to better work performance, better customer satisfaction, or any of a host of other business or social grail quests. One of the authors of this paper (Coulter) was recently rewarded by audible.com – an online audio book vendor – for being an "All Nighter." This badge recognized a stellar effort of having listened for 8 hours overnight, a reward earned by having skillfully fallen asleep listening to a book. Even the badges that were nominally achieved – such as the "Marathoner" award for listening for two hours straight – have little to do with books, learning, or the enjoyment of literature. Whether it's kids or adults playing the game, when gamified rewards get in the way of authentic experience, it's a problem. As educational psychologist John Nicholls remarked about a Pizza Hut reading incentive program for schools, frivolous incentives tend to produce "fat kids who don't like to read" (Kohn, 1993, p. 73). Clearly when we talk about games as potential spaces for virtue development we mean more than that. On the more substantive side, everyone who has flown has benefitted from the flight simulators used by pilots to develop and maintain skills. Likewise, armies use games to build battle-readiness, and scientific researchers use games such as Foldit to invite mass participation in important but mundane research tasks.

As the range of examples cited here shows, the term "game" is too broad to be of much analytic use, as it encompasses everything from ephemeral trivia to deeply meaningful experiences. Rather, we need to be more specific about what we mean by games. Here, we are talking about experiences which call on the player to deploy certain virtues and skills toward a successful resolution. While an exhaustive list of game characteristics would devolve into a semantic mess, we are proposing a few key anchor points. By games, we are talking about experiences in which the player encounters (1) indeterminacy, (2) challenge, (3) choices, (4) outcomes, and (5) consequences. Each of these – pitched at the right level for a player – is at the heart of a good game. Where these are missing, the novelty of an experience quickly fades.

While the focus of what follows is on computer-based games – since this is where kids spend a great deal of time, and since it is such a focal point for parents' and teachers' concerns – much of what we discuss has broader application into the rest of kids' lives. The crux of our argument is that games *as we are framing them here* can be hothouses for character development, and an effective counter to forces in modern childhood which enforce conformity and scripted behavior. In particular, we have found that experiences in which kids author their own experiences through modifying ("modding") existing games or designing their own to be particularly fruitful in this regard. More than 50 years ago sociologist C. Wright Mills (1959) warned against people becoming "cheerful robots" carrying out tasks and seeking

goals determined for them. We live in a world where school experiences are largely pre-scripted for kids and teachers alike, and many after-school programs are likewise orchestrated for kids by adults. To balance this, productive game play and game design experiences can offer supportive contexts in which kids develop the character attributes they need to build meaningful lives.

What does the research have to say?

Taken as a whole, there is a complex and often contradictory literature on the impact of games on young players. For example, Mishra and Foster (2007) identified 250 distinct outcome claims, and used grounded theory analysis to develop a classification scheme that included two broad categories of outcomes, physiological and psychological. The physiological category included claims that were developmental or behavioral in nature while the psychological category included cognitively and socially oriented claims. The psychological category also encompassed 4 sub-categories of claims related to practical skills, cognitive skills, social skills and motivation. Within this analysis, some studies showed a positive effect, while others showed a negative effect. In their review, Adachi & Willoughby (2012) found more than 100 studies of the negative effects of video games and less than 30 studies of the positive effects.

There are at least three important caveats to keep in mind when considering the research base: First, as noted earlier, the term "game" is often used loosely to cover experiences with a range of depth and significance. Second, the gaming world has changed quite a bit in the past decade with the rise of ubiquitous mobile and web-based games. With this change in who plays and how games are played, it's likely that what it means to "play a game" has changed in substantive ways. Thus, the time of the original studies embedded in the reviews matters. Third, and most importantly for the argument advanced here, we are not seeking to describe impacts of gaming in general. Rather, we are considering the potential for certain uses of games and game design spaces to promote virtue development. Just as having a hammer and some lumber won't build a house, a game by itself won't build virtue. The context for use matters.

More relevant for the focus of our work, Granic, Lobel, & Engels (2013) review the literature and make the case for further investigations of the *potential* for video games to promote growth in four domains: cognitive, motivational, emotional, and social. By integrating insights from a range of psychological sub-disciplines (e.g. developmental, positive, social, and media), they propose possible mechanisms by which playing video games can foster real-world psychosocial benefits. These studies provide further evidence that video game play *can* have character related outcomes. This won't happen however, in the absence of a well-crafted game space.

Toward a virtue-building game environment

While precise and widely agreed upon definitions of character and virtue do not exist, lay people and educators tend to agree that these attributes are multifaceted and develop over time through an integrated system that includes cognition (symbolized by the head), affect (the heart), and behavior (the hand). Among thinkers in the field, Snow (2010) traces the philosophical roots of virtue to Aristotle's notion of virtues as excellences that together promote a disposition to act well, thereby enabling us to lead a good life. She characterizes common conceptions of virtue as "enduring dispositions incorporating practical reason [and] appropriate motivation." Thomas and Brown (2011) argue that in the turbulence and complexity of modern times focusing on dispositions is vital. They argue that these dispositions – the tendency to do things in a particular way that shapes how we approach problems – are at least as important as knowledge and skills. Further, they argue that these dispositions can not be taught but must be cultivated. Developmental psychologist Marvin Berkowitz defines character as "the complex constellation of psychological characteristics that motivate and enable individuals to function as competent moral agents" (Berkowitz, 2013). Each of these framings suggests that there is a common thread in certain "ways of being" that promote and nurture a disposition toward virtuous, high-character behavior.

Giving shape to these ways of being, David Shields (2011) has identified 5 dimensions of character (four dimensions at the individual level and one dimension at the group level) that are particularly relevant in considering the implications of game play and development for virtue development:

- *Performance character* describes how people approach tasks: Do they work hard and persevere in their efforts? Are they focused on doing their best or just getting by?
- *Intellectual character* describes ways in which people approach information and ideas: Do they keep an open mind and weigh evidence? Are they willing to reconsider previously held beliefs in light of new information?
- *Civic character* refers to that aspect of character through which people show their commitment to their community: Are they committed to improving the quality of life for themselves and others?
- *Moral character* refers to aspects of character associated with how people interact with each other. Kindness, consideration, and empathy are key. What does it mean to be a good person, and to see the value in others?
- *Collective character* refers to patterns of group life – whether that be in a family, school, or peer group – and the procedures and routines that reflect the group's norms, goals, values, and expectations. Attributes of collective character include maintaining an atmosphere of excellence, respect, and trust. Relevant questions focus on whether participants feel safe, happy, and inspired to excel.

In our analysis, we have found Shields' framework to be particularly helpful in making sense of game experiences. How does a particular environment foster the development of these character components? From there, does the overall experience contribute to the virtues, dispositions, or characteristics described by Snow, Brown, and Berkowitz? When it does, these are the "bright spots" (Heath and Heath, 2010) which suggest to us that game spaces can in fact promote virtue or character.

To make these experiences more tangible, we introduce three pre-teen youth who exhibit character traits such as future-mindedness, diligence, and honesty in their work designing and playing games:

First, Matthew. Each Sunday he came into his church youth group and promptly relieved one of the group leaders of his iPhone, which quickly became an epicenter of activity as a cluster of 6th graders played games in the minutes before the formal beginning of the youth group. By itself, this is pretty ordinary tween behavior. One offhand utterance he made, though, gives a window into how games in a supportive environment can enable a different level of future-mindedness than schools and other highly scripted environments. When a friend asked him if he had mastered a certain level, he responded in a chirpy, optimistic manner "not yet." By his tone, he suggested that this was a desirable outcome that he was working toward – part of his self-constructed road map of progress within the game and in the meta-sense, as a gamer. While a paper makes it hard to convey tone, it's important to draw a distinction between this optimistic forward-looking trajectory and a dismissive "no" as a skill not on his growth path, or a more dour "not yet" that is a likely reply when a kid is asked if homework or chores have been completed. Instead, Matthew has a vision of where he wants to go, and is working toward it.

Next, Bennett, a student who participated in a series of game design camps run by the Missouri Botanical Garden. One summer he was working toward a fairly complex game where the on-screen player had to navigate through 3D mazes to achieve his goal. Clearly, walking through or over walls would have taken away the navigation and search challenge Bennett was trying to embed in the game. But, the StarLogo game design tools only allow the character to test if there is a wall ahead and respond accordingly. Keeping the player from walking through a wall was a success, but Bennett's contentment was short-lived when he realized that the player could still back through the walls. After trying several possible solutions to overcome this limit, he hit on a solution. Knowing that the "wall ahead" command did what he needed, and with the help of a quick overview from the camp leader (Coulter) of how the software interprets the commands, Bennett crafted a set of program blocks to have the player execute before backing up. In essence, he crafted his own "wall behind" test by having the player turn 180º, look if there was a wall ahead, and if not, return to the original position and go backward. Bennet's diligence in working toward a solution through iterative efforts allowed him to achieve a desired goal.

Finally, Ross, an 11-year old self-styled game designer. In drafting his part of a book chapter he is co-authoring (Coulter and Stauder, in press), he spun a quote that speaks volumes about the difference in virtue development between an environment that is set up to foster it versus one that stifles it. There he notes that game design "is a lot different than school because it requires smarter thinking and trial and

error x 17. In school you don't get a second trial because when it's done it's done and that's your grade." In his design work, Ross is a master of iteration, working toward very complex solutions, but also with an eye toward the player's experience: just enough challenge to keep it interesting. This work stands in marked contrast to much of Ross's school work, where as he notes, it's largely a one-off effort that is quickly discarded. Regarding this quickly disposed work, Sidorkin (2010) has coined the evocative term "wastebasket economy" to describe assignments where the end result is a grade and disposition. As Sidorkin describes typical school work, "[i]n all cases, despite differences in subject matter, the goal is learning content for purposes of assessment, the chief identity available is that of a student, and the work primarily involves producing things that eventually end up in a wastebasket."

Whether designing or simply playing, each of the three examples offered here show that there is a multi-faceted level of honesty being nurtured throughout the experience. Both play and design require that you be honest about your own set of skills and about where you might focus effort on developing new skills. You can literally "rage against the machine" if you think you should score higher or that the design tools should accommodate your wish automatically, but the computer won't care, and won't change. Reality sets in pretty quickly and motivates efforts toward a solution. When it comes to game play or design work, if you want to beat the game or craft an elegant design solution, you need to work within the resources you have to achieve success. Also, when kids work in a design studio environment, they come to appreciate the range of skills others possess, which helps everyone to see their own strengths and to value others more highly. This process fosters the development of an honest appraisal of one's own skills and dispositions, which contributes to developing a sense of next steps to be taken. We routinely see kids learning desired skills from each other – a process usually frowned on in schools.

In many ways a productive game environment contrasts with the wastebasket economy of schools where assignments are given and evaluated externally, with little opportunity for students to assess the situation and work iteratively and collaboratively toward growth. Taken together, Matthew, Bennett, and Ross give us windows into how a well-crafted game space can nurture essential virtues such as future-mindedness, diligence, and honesty.

Measuring for virtue

Given the potential for game play and design to support virtue development, we are currently working to build an empirically-based body of work in this area. As we do this, we hope to expand the scope of previous efforts (e.g. Shute and Ventura, 2013) that focus on academic performance using prefabricated game spaces. Instead, we are looking to encompass the broader range of virtue development that is potentially nurtured in the context of students' original game design projects. The key distinction we see is in the ways in which original designs support students in setting, pursuing, and revising their own paths, rather than following paths set for them.

Structurally, our work builds on frameworks of evidence-centered design, or ECD (Mislevy, Almond, and Lukas, 2003). ECD is an approach which seeks to associate unobservable but highly valued traits with more observable proxy measures. For example, Shute and Ventura (2013) have used ECD to research conscientiousness within the context of students' efforts at solving physics problems. Their construct relies on two valued skills (resource management and time management) which are themselves represented by measurable indicators of conscientiousness (e.g. the number of unsolved problems). Using a "stealth assessment" strategy, Shute and Ventura use server-side tools to record data on the choices students make in their work and the net results. To the extent that the proxy measures are valid indicators of the unobservable traits, evidence can be gathered to measure students' current capacity and change over time.

Our work plan is first to develop ECD constructs for a set of targeted virtues that we have found to be nurtured through intentional game play and game design. Each of these virtues will be associated through the constructs with measurable indicators that can be captured by the servers running MIT's new StarLogo Nova design environment. Data mining will enable us to develop statistical profiles that capture, compare, and contrast the range of attributes students exhibit at certain levels of experience (e.g. How do novices pursue their work, and how is this different from choices made by more experienced designers?).

We will also be able to develop case studies of the trajectories exhibited by individuals over time as they gain experience and mature as game designers. As our partner in this effort, MIT has developed a work plan with increasing levels of sophistication and complexity, contingent on the levels of funding we are able to secure to bring this project to fruition.

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