

# Boys' Play in the Fourth Space: Freedom of Movements in a Tween Virtual World

**Kristin A. Searle**

University of Pennsylvania  
3700 Walnut St. Philadelphia, PA 19104  
Searle@dolphin.upenn.edu

**Yasmin B. Kafai**

University of Pennsylvania  
3700 Walnut St. Philadelphia, PA 19104  
kafai@gse.upenn.edu

## ABSTRACT

Over a decade ago, Henry Jenkins [17] wrote “Complete freedom of movement’: Video Games as gendered play spaces” in which he argued that video games provide a contemporary alternative to the out of doors freedom of movement boys historically accessed. Video games operate like a ‘fourth space’ (a term coined by Van Vliet), a much-needed alternative to the adult-supervised and structured spaces of home, schools and playgrounds [48]. These findings echoed the work of many developmental psychologists and others who have long understood that children’s access to play in particular spaces is gendered [33, 43, 46]. We draw on Jenkins’ understanding of “freedom of movement” and developmental psychologists’ research into gender play and gendered play spaces to examine boys’ play within Whyville.net, a virtual world that had 1.5 million registered users between the ages of 8 and 16 at the time of our study. While we have a lot of quantitative information about boys’ play in video games and virtual worlds, we know little qualitatively about how they play. This stands in contrast to our nuanced understandings of why girls and women do or do not play, and how they play. Our goal was to extend Jenkins’ [17] notion of “freedom of movement” into virtual worlds, which differ from console games in that players are responsible for constructing much of the content and they often lack a finite goal and story [6]. Combining quantitative and qualitative methods, we analyzed logfile data of 595 players involved in online gaming over a six-month period. Twenty-one players also participated in an afterschool gaming club with online and offline spaces. We looked at activity frequencies across 13 categories and analyzed logfile data qualitatively, supplementing our understandings with data from field notes, interviews, and video. Three case studies of boy players were developed, with each player representing a different level of expertise and participation (core, semi-core, peripheral). In extending “freedom of movement” into virtual worlds, we address boys’ navigation of virtual spaces as a *process* with geographical, personal and social dimensions. We also view these play spaces as gendered along three dimensions; mobility within the space, access to the space, and control over the space. An overview of the boys’ day-to-day

activities in Whyville and discussion of their establishment of “home bases,” or spaces which they used as platforms for further exploration in Whyville, shows commonalities across boys’ play. These overviews are supplemented with in-depth analyses of boys’ activities in Whyville, which show nuanced differences connected to their varying levels of expertise. The fact that boy players have “home bases” where they settle for greater or lesser periods of time is compelling and contrasts with the perpetual motion of boys playing console video games. It also contrasts with previous studies of gendered play, which emphasized girls playing closer to home while boys ventured further afield. Along the social dimensions of boys play we found echoes of Jenkins’ characteristics of boys’ historical outdoors play and monster chasing in console video games. Finally, we found it difficult to compare the personal dimension because the possibilities offered to boys for gender play through avatar design activities are more expansive than their ability to choose from a set number of stock characters in console video games. The increased importance of body image in relation to masculinity was also evident in the boys’ attention to avatar design. We conclude that virtual worlds allow for freedom of movement, but in slightly different ways than console video games. Without a finite goal to their play, boys are able to place an increased emphasis on historical dimensions of boys play and create their adventures through interaction with one another *and* the space of the virtual world simultaneously, rather than through following a prescribed adventure.

## Author Keywords

Virtual worlds, freedom of movement, masculinity

## INTRODUCTION

Over a decade ago, Henry Jenkins [17] wrote “Complete freedom of movement’: Video Games as gendered play spaces” where he argued that video games provide a contemporary alternative to the out of doors freedom of movement boys historically accessed. Video games operate like a ‘fourth space’ (a term coined by Van Vliet) [48], a much-needed alternative to the adult-supervised, structured spaces of home, schools and playgrounds that could provide room for independence, peer recognition, competition, role play, humor, and violence in boys’ play [38, 39]. Jenkins’

**Breaking New Ground: Innovation in Games, Play, Practice and Theory. Proceedings of DiGRA 2009**

© 2009 Authors & Digital Games Research Association (DiGRA). Personal and educational classroom use of this paper is allowed, commercial use requires specific permission from the author.

cultural geography of video game spaces and their resonance with boy culture echoed the findings of developmental psychologists, educators, and others who have long understood that children's access to and play in particular spaces is gendered [33, 43, 46].

With some notable exceptions Jenkins' essay remains one of the few studies that has examined gender and video games from the perspective of boys' play [9, 10, 40, 42, 47]. Often what we know about boys and video games is captured in surveys documenting their play preferences and quantity of game play [37, 29]. But we lack a nuanced understanding of how boys construct and play in video games – the kind of insights we have about girls' play or the absence of it. Indeed, research on gender and games has almost exclusively focused on explaining why girls and women are not present or interested in games [for overviews, see 5 and 24] and developed designs to draw girls into games while developing technical skills [2, 15, 21, 25].

This paper intends to fill this gap by examining boys' play in Whyville.net, a massive online world that had 1.5 million registered players at the time of the study, who were between 8-16 years with over 68% girls as players. Youth play games to earn a virtual salary that they use to develop their avatars and socialize with others [22]. We conducted observations in an after-school gaming club where youth came together to play on Whyville.net for three months and continued at home for another three months. One of our goals was to expand Jenkins' analyses into virtual worlds that are unlike video games because they are constructed to a great extent by players' contributions while often missing a finite goal and story [6]. Another goal was to understand boys' play on their own terms rather than essentializing it – a criticism often raised about research on gender differences. In this context, our research offered the possibility to examine notions of masculinity in boys' play [2, 26, 35, 40, 47]. Our focus age group, namely tweens, is of particular relevance given their transition from childhood into adolescence.

To address our goals, we developed a new approach combining quantitative and qualitative analysis techniques. Our main data source were log files containing time-stamped records of all movements and chat interactions online. In more traditional fashion, we employed quantitative data reduction techniques to establish frequencies and clusters of participation for each boy individually and the club as a whole. Using the same logfile data we then developed case studies of three boys, ages 10-12 years, who ranged in their play experience from peripheral to core gamers in the after-school gaming club. This time we used these records to rebuild the rhythms of daily interactions for each case, providing us with a better sense of what boys were doing and how their participation might shift over time. Before turning to our findings, we provide an overview of the relevant literature and outline our methods of data collection and analysis in more detail.

## BACKGROUND

Developmental psychologists and others interested in children's play have noted its gendered dimensions. In the United States, there is "a long history...of girls and boys engaging in different types of play" [46]. The contemporary marketplace is no exception [4]. For instance, we know that 99% of boys between the ages of 12 and 17 play video games, and that they play more frequently, for longer periods of time than their female counterparts. We also know that more boys (50%) prefer video games with a 'mature' or 'adults only' rating than girls (14%) [9]. These preferences in play seem to reiterate what we know about boys' play historically, and their preference for rough and tumble play that is hierarchical, violent, and often perceived as physically aggressive [36, 38, 39].

What is perhaps more surprising is how little we know about boys' actual video game play and the in-group variation amongst boys. Only a few recent studies have addressed these shortcomings [9, 10, 40, 42]. Most relevant to our work is Stevens and colleagues' ethnographic study of 13 youth (ages 9-15) who played video games in their homes. They found that boys do not necessarily take the games they play at face value, nor do they always play the games in the ways in which game designers intended – a finding which other studies confirmed albeit with older players [10, 40]. One aspect that is important to our research pertains to the level of experience that players have with the game. Devane and Squire [9] found that players experience the same game (Grand Theft Auto: San Andreas) differently depending on what outside knowledge they bring to the game, as well as their own and their friends' familiarity with the game being played. Because of these aspects of videogame play, Devane and Squire advocate viewing videogames as "possibility spaces," or "open work[s] that [allow] the player many potential actions and thus styles of play" [9].

When Jenkins developed his argument, he was primarily focused on console video games, like Super Mario Brothers and its scrolling screen, which, relative to virtual worlds, are more closed environments with a story and set goal. While the dividing line between video games and virtual worlds is somewhat ambiguous, Castronova [6] characterizes virtual worlds on the basis of their persistence, the lack of an end goal, the presence of an economic system, and the physicality of the world as established through avatars and the simulation of a first-person experience that they allow. Given these characteristics, the freedom of movement that Jenkins conceptualized for boys' play in video games might take on different dimensions in virtual worlds. As a starting point, we drew on Leander and McKim's [27] view of space as a process rather than a static entity – "a rich process that draws upon multiple material and discursive resources, is imbued with relations of power, and is malleable through individual agency and imagination."

We view play spaces in virtual worlds as gendered along the dimensions of mobility within the space, access to the space, and control over the space. Several studies have addressed the gendered dimensions of in-room and in-world play [3, 32, 34] but few have addressed gendered play in-game [1] with a particular focus on what boys do. In this context, the avatar constructions players engage in over time add a personal dimension to boys' play in virtual worlds; they are a central feature of virtual worlds and differ significantly from the stock characters that players of console games are able to choose from. Thus boy players are able to portray and resist stereotypical representations of masculinity. The ability to explore and challenge pre-existing notions of masculinity is even more relevant in virtual worlds, especially in conjunction with the tweens we studied, because they are developmentally beginning to separate themselves more and more from female caregivers and behaviors that would characterize them as "feminine" [38].

In addition to negotiating the meanings of masculinity through avatar design, boys also negotiate these meanings through interactions with others. Both are key features of virtual worlds. Many players in Whyville spend most of their time engaged in social functions like chatting and y-mail (Whyville's version of e-mail). Further, Whyville offers an unprecedented opportunity to address the social dimensions of play in relation to masculinity because of its unusual demographics. Most of the previous research has focused on the entrances of boys into a "girls only" space and vice versa [35, 45]. With Whyville's prominence of girls we have the opportunity to study a girls' space from boys' perspective.

#### **CONTEXT, PARTICIPANTS, AND METHODS**

Whyville.net is a massive, free virtual world (in 2005 at the time of our study it had over 1.2 million registered players) that encourages youth ages 8-16 to play casual science games in order to earn a virtual salary (in 'clams'). The general consensus among Whyvillians (the citizens of Whyville.net) is that earning a good salary and thus procuring a large number of clams to spend on face parts or other goods is essential for fully participating in Whyville [22]. Looks also demonstrate a player's tenure and relative experience level; new players have fewer clams, and their looks generally show this because cheaper face parts are perceived as less attractive [20]. When Whyvillians enter the site, they immediately arrive at the Welcome Page with links to events for the week, The Whyville Times newspaper, survival tips, and FAQs. Users can also check their personal email, status of their Whyville salary, and their latest bank statement. Whyville has an active community life that elects its own mayor, organizes annual virtual proms, and posts many public petitions that campaign to include or change features of Whyville. Places like the trading post allow Whyvillians to exchange goods. Whyvillians may head to the sunroof, pool party, and other

locales to chat with friends and other users on topics related to school, friendships, and appearance.

In early 2005 we set up an after school club where 21 older children (tweens) in the fourth-sixth grades (9-12 years old) came to play on Whyville for an hour most days after school. While the club began as a quiet place, it became lively as participants learned the site and began to shout advice to each other, arrange parties on Whyville, chat, throw virtual projectiles, and critique each other's avatars [12, 18]. Most youth were new to Whyville, so learning to participate in the site was a common (if tacit) goal. Club members eagerly displayed their knowledge of the site by offering advice and answering questions, such as how to create a good look or throw a projectile. The club members were racially and ethnically diverse and came from a range of socio-economic backgrounds. All had access to computers at home and in school. In addition to the after school gaming club, we also recruited over 500 online players who consented to be tracked on Whyville.net.

For our analyses, we focused on the logfile data for all of these players, which was indexed by participants' names and time-stamped for every mouse-click and chat interaction. Thus, we could follow players' participation in Whyville, whether they were logged in from home, school, or any other location over a six-month time period. We condensed the locations and activities into 13 main categories: ymail, whyvox, whisper, economic, social, multi-player games, information, house, games, face, chat, bbs, and miscellaneous. We then created clusters based on their participation frequency that revealed three main player profiles: core, semi-core and casual players. For the case study, we selected one boy from each player category. By distilling mouse clicks and chat interactions into narrative form, we were able to develop a more nuanced understanding of how each boy player in the gaming club moved from "newbie" status to being a full-fledged Whyvillian. We have described elsewhere this technique of qualitative log file data analysis [8, 21].

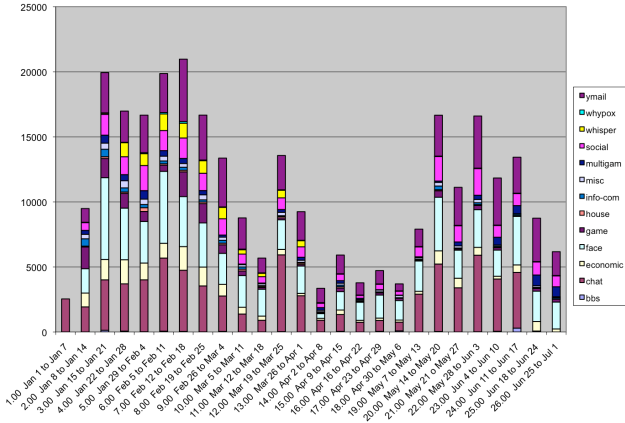
#### **FINDINGS**

So how do boys play in the virtual world of Whyville? We answer this question in two ways: in the first section, we present an overview of general club activities and three player profiles while in the second section we present portraits of individual player's engagement in activities over time.

##### **Profiles of Boy Players**

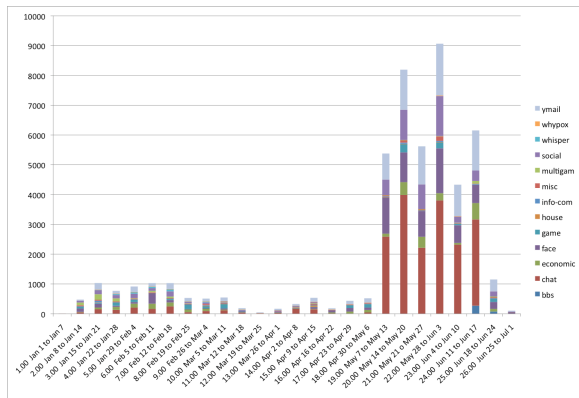
Our first take on boy's play is a rather traditional one by capturing play activity on the club level. When we examined their overall participation (see Figure 1a) we found that chat, y-mail, and avatar design-related activities (shopping, trading, creating, or putting on face parts) were the three most popular. This was also true of the club as a whole. When we compared these frequencies to those of the girls in the after school gaming club using raw numbers, we found significant differences only in relation to economic activities (looking at salary or bank statements),

participation in multiplayer games (e.g. checkers), and engagement with the Whypox epidemic (searching for information or participating in Whypox related activities) [6]. Overall, player participation was highest during the time when the after school gaming club was in session, but players also increased their usage towards the end of the study period.

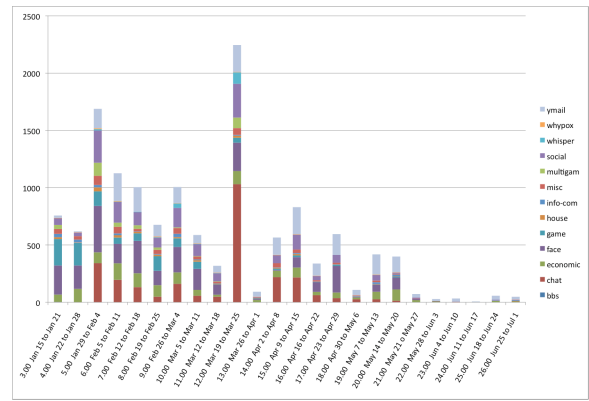


**Figure 1a:** Player Profiles for All After School Club Users

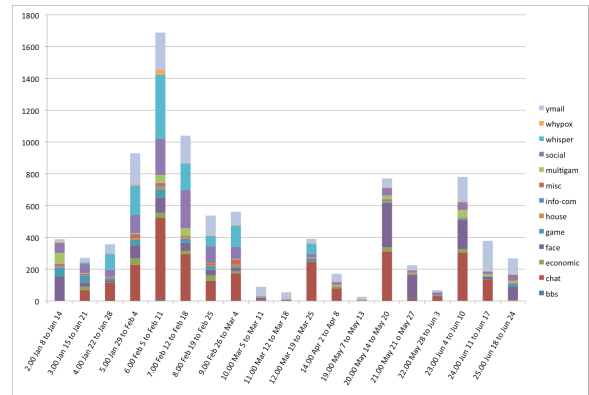
As informative as this overview is, it tells us little about individual boy players, how they become players in Whyville, what their centers of activity were, and how their participation might have shifted over time. By creating profiles based on clusters of their participation, we were able to select three cases along a continuum of engagement ranging from core to peripheral players (see Figures 1b Blake: core, 1c Brad: semi-core, and 1d Aidan: peripheral). There are few things we knew about these players from field notes and interviews.



**Figure 1b:** Player Profile for Blake/Raybeams



**Figure 1c:** Player Profile for Brad/Vulcan61



**Figure 1d:** Player Profile for Aidan/Masher47

At the time of the study, Blake was a fourth grader. On Whyville, he was known as Raybeams. While Blake/Raybeams was considered a core gamer, his participation in Whyville was initially not as intense as other players. When asked how he would describe Whyville to a new player, he said, “you play games and you make your face look different, you talk to people”. During the first nine weeks of the study, his game play is notable, but the major shift in his participation comes in week 19 when he jumped from a prior high of 361 instances of face-related activity in week 6 to 1215 instances in week 19 and 1506 instances in week 22. The increases in his instances of chat reveal a similar pattern beginning in week 19. During this time of intense participation, Raybeams developed a reputation for himself as a dealer of hard-to-find face parts. He also managed to hack and scam his way to 1 million clams – something that would make him “the best” on Whyville.

Brad, also in the fourth grade, was a semi-core gamer. On Whyville, Brad’s avatar was named after a video game character, an aspect we have tried to capture by calling his

avatar Vulcan61. After visiting Akbar's Face Mall for the first time during his fourth day, he spent more time engaged in face-related activities than anything else. He also liked to play multiplayer games like Chinese checkers, at which he excelled. Another interesting aspect of Vulcan61's play in Whyville is that he frequently sought out information on the games. For instance, when he started to play the car racing game, he viewed the tutorial and tried out his skills on the practice tracks before playing in the main arena.

Aidan, our peripheral player, was a sixth grader. He liked to partner with Blake during the after school gaming club because "[Blake] taught [him] where to go" and knew a lot about Whyville. In Whyville, Aidan went by Masher47 and especially liked "the money," since earning clams allowed him to buy stuff. He fluctuated between regularly changing how his avatar looked so that "nobody [would] recognize [him]" and he could play tricks, and keeping it the same, which made it easier to meet up with friends. In addition, Masher47 spent a lot of his time flirting. In order to develop a fuller portrait of boys' lives in Whyville, we turn to a more fine-grained analysis of their activities.

### **Portraits of Boy Players**

We start out with describing boys' regular activities, giving us a sense of their everyday lives in Whyville. The daily routine that many players develop over time as they move from being new members of the community to more involved players is perhaps most indicative of their navigation in the virtual world. This aspect also featured prominently in Jenkins' analysis of video games offering freedom of movement to boys no longer venturing out in their neighborhoods. Further, these dimensions of boys' play most closely mirror the historically established elements of boys' culture [17, 39] and allow us to examine how the boys are engaging with circulating discourses about masculinity.

While each boy played with differing levels of intensity their first steps into Whyville and later routines are remarkably similar. All of them began their adventures from the welcome page, which initially served as a home base from which they ventured further afield as they grew more comfortable with the various aspects of Whyville. Over time, these home bases shift as players become more engaged with particular aspects of Whyville and carved out niches for themselves. Analyses of word frequencies highlight this element. For Vulcan61 the avatar design areas of Whyville became a kind of home base but he also frequented the moon and the beach. Masher47 spent a majority of his time at the beach, which is consistent with our characterization of him as a flirt. Finally, Raybeams is particularly interesting because his home base shifted over time. He went from frequenting one of the Geek Speak lounges (places where you can learn more about a particular science-related topic from experts that often serve as hangouts for particular groups of players) to later spending more time in a series of specific trade rooms. Thus, players home bases are one component of viewing space as a

process in Whyville. While they provide places of relative stability from which players venture out into the rest of the world, they also shift over time in conjunction with players' participation patterns.

In interviews, all of the case study players described finding new places in Whyville through trial and error. For instance, after discovering that he could teleport to Mars, Earth, Saturn, and the moon, Vulcan61 experimented with teleporting elsewhere, trying out the commands, "teleport Florida" and "teleport anywhere." In addition to spatially roaming farther from their "home bases," the case study players also made the most of the "possibility spaces" of Whyville [9] by imbuing them with their own meanings through interaction. They hosted group parties on planets or arranged to meet their friends in a particular place.

Thus, Jenkins [17] suggestion that video games might provide 'complete freedom of movement' for boys increasingly confined to domestic spaces seems to hold true for virtual worlds. While in some ways there is less fantasy play involved, virtual worlds may allow for more 'freedom of movement' because there is no prescribed story line and boys may create their own paths. In order to develop this argument, we supplement our understanding of Whyville's various cultural geographies by taking a more in-depth look at the avatar design, projectile throwing and scamming activities of the case study players.

### *Identity Play: Avatar Designs*

With their avatar design opportunities, virtual worlds provide an ideal location for tweens to try out different personas. Two snapshots drawn from interviews with Aidan reveal Masher47 emulating Fifty Cent (who was one of Aidan's favorite rappers) with a jersey and a headband and, later, dressed up in his "Goth look" with a Dracula Suit, sunglasses, and angel wings. Aidan described the second avatar as having "[his] look – the chin thing, it has the wings, it has the sunglasses." Aidan's choice to play with Masher47's appearance, sometimes looking more like his real self and other times trying on other identities suggest that he was literally trying on different masculinities, particularly those available to African American men. This is especially interesting given Fifty Cent's hypermasculine presentation of self and connects to the popular (and problematic) representations of African Americans often seen in video games [30, 31].

Similarly, Blake created an avatar that did not look exactly like him. As he told us in an interview, "I don't have blond hair, I'm not wearing a hat, I don't wear sunglasses, and I don't have a straight...nose." Nonetheless, Blake "liked it that way" and infrequently changed Raybeams' appearance, usually only changing his shirt. Finally, while we did not collect data about the specifics of Brad's avatar design over time, we know that he enjoyed of period of dressing like a pharaoh and spent most of his time engaged in face-related activities. When we look at a time analysis [11], we see that the boys spent significant amounts of time participating in

avatar design activities. In sum, the boys experimented with different appearances (and, by extension, masculine identities), but to varying degrees. Like video games, virtual worlds may serve as a space where boys can try on different masculinities. Not only do we see this in the boys' avatar design activities but also in how their avatars were perceived by others.

One way in which we noticed that the boys were concerned with how others perceived their avatars was in their use of space related to avatar design. It was not uncommon to see them use the "Pick Your Nose" feature to alter their appearances before heading into the more public spaces of Whyville. In addition, avatar design was a hot topic of conversation in Whyville and the gaming club. While chatting with someone in Whyville, Masher47 acknowledged that he "[couldn't] seem to get the face right" and, in the gaming club, others accused Aidan of giving Masher47 "girly eyes." In addition, Masher47 sometimes said things in Whyville like, "whoever likes me press 222" or attempted to flirt with others by saying things like, "I like your face" or "cute hat." Raybeams and Vulcan61 also engaged in similar behaviors. On one occasion Raybeams even participated in a beauty contest (or "bc"), an activity usually associated with girls. Thus, we see the boys taking up circulating discourses about masculinity and testing them out through their avatars' appearances and interaction with others. Further, we found that Whyville.net provided boys with more 'freedom of movement' in relation to trying on different masculine identities because there was no set storyline or ultimate goal and they had greater agency in relation to shaping their avatars' looks and actions. The aspect of experimenting with various understandings of masculinity is even more evident when we look at boys' projectile throwing activities, which is one of the closest things to "touching" someone within the virtual realm of Whyville.

#### *Gender Play: Projectile Throwing*

In Whyville, one of the most popular activities is throwing projectiles at other players. There is a projectile store where you can buy different types of objects to throw at other players using the throw command (e.g. throw mudball kas293). It is perhaps the activity that comes closest to the rough-and-tumble play and chasing games observed in boys play [45]. Overall, we observed that boys were more interested in projectile throwing than girls in the gaming club [12]. Each of the boys engaged in projectile throwing to a different extent. Raybeams was the most frequent projectile thrower and Masher47 was the least frequent even though he stressed that he liked to "[follow] people around and start throwing things at them." The boys also varied in how they threw projectiles, who they threw them at, and what kinds of projectiles they threw. Elsewhere we have elaborated on these themes in more detail [13].

Boys assigned nuanced meaning to projectile throwing: the sort of virtual rough and tumble play (sometimes accompanied by actual rough and tumble play in the

gaming club) they engaged in when they had projectile throwing wars with one another in contrast to the throwing of heart and kiss projectiles that revealed varying understandings of masculinity. When these projectiles were thrown at girl avatars, it was seen as a flirtatious move. However, when they were thrown at other boys, it was seen as a teasing gesture that reflected on both the thrower and the recipient's masculinity. By throwing "girly" projectiles, the thrower was playfully suggesting that the recipient might have some feminine qualities. In return, the male recipients of these projectiles often accused the thrower of being "gay." In one instance, Vulcan61 threw a heart projectile at another Whyvillian. The accompanying chat interchanges included phrases like "your dead," suggesting that the individuals were engaged in playful teasing. As the barrage of projectiles continued, Vulcan61's playmate accused him of being "gay" because he was throwing heart and kiss projectiles at another guy, to which Vulcan61 responded, "I only have hearts. I am not gay." In fact, anytime the boys did something that was perceived as too feminine, society-level discourses about masculinity, and in particular a pervasive homophobia, surfaced. This echoes Reed's [38] discussion of boys' understandings of appropriate and inappropriate touching during rough and tumble play, as well as Sanford and Madill's [40] discussion of boys taking up and resisting popular narratives of masculinity through video game play.

When we analyzed boys' throwing of other kinds of projectiles, we found similar themes within the space of Whyville.net and in the space of the gaming club. One day, while not participating in the action on Whyville, our field notes recorded Blake actively encouraging his male classmates who were engaged in a projectile throwing war with one another. He ran back and forth between their computers, typed commands on their keyboards, and gave away players' locations to others. For instance, after throwing a pie projectile at another player's avatar using Trevor's keyboard, Blake yelled out "Yeah! We got you, Gabriel!" to which Gabriel replied, "I'm taking you down!" As the projectile throwing war continued, Blake taunted various players about being scared and gave away their locations so that others could chase them from location to location and throw projectiles at them.

In this example, we see the boys collectively engaged in mapping the space of Whyville as they launch projectiles at one another and move from place to place to avoid being hit by projectiles. This play is violent, aggressive, and as close to physical as players can get in Whyville, but it is also cooperative as boys team up for action [34]. In addition, their verbal commentary in the club is similar to the kinds of things we expect to hear when boys' are engaged in rough and tumble play or the kinds of chase games Thorne [46] observed on the playground. Thus, boys' play can indeed be translated into the realm of video games and virtual worlds as Jenkins [17] posited. However, whereas Jenkins worried that video game spaces were limited in that

they provided “only pre-structured forms of interactivity,” virtual worlds allow boys to create their own pathways and interactions as they chase each other and throw projectiles. Here they revealed another dimension of how boys engage with and test larger cultural understandings of masculinity by playing war-like games and taking up more stereotypical notions of what it means to be a “man.”

#### *Transgressive Play: Scamming Clams*

The last activity we wish to highlight is scamming. While scamming is typically not included in discussions of play in video games and virtual worlds, Consalvo [7] has shown that it is a fairly common practice and should be considered an everyday part of game play. Further, Sanford and Madill [40] highlight the fact that, “[b]y using cheats and engaging in a community that understands the purpose of cheats and the importance of them, players can band together to resist traditional and mainstream rules.” Put more simply, scamming in virtual worlds allows players to be “transgressive”. Of our three case studies, only Raybeams was engaged in scamming, but one of the girl case studies from the same after school gaming club [12] also scammed others in similar ways. Raybeams was a relatively low-profile player on Whyville during the gaming club, where he participated in standard Whyville activities like buying face parts and playing games. Raybeams initially visited the Trading Post intermittently, but as he spent more time in Whyville, he began to spend more time in the Trading Post and completed more successful trades. In mid-April he completed twenty trades in a fourteen-minute time span (74% of his total session). Then, in May, he began heavy duty trading and accusations that he was scamming others began, as evidenced in his constant denials of, “im not a scammer.” He advertised a “clam doubling” scam that involved an illegal trade that transfers all of the victim’s clams into the scammer’s bank account. It is unclear where this all starts, but Raybeams mentions getting hacked by someone and this may serve as his justification for hacking and scamming others. In addition, Raybeams’ scamming might have been connected to his desire to earn one million clams, which he decided would make him “the best” on Whyville. There are no official ways (beyond one’s salary, which is indicative of game play ability as well as tenure in Whyville) to measure one’s performance in Whyville in relation to other players. Thus, it is interesting that Raybeams developed a goal of earning one million clams for himself and used all necessary means to succeed at his goal. Raybeams’ engagement in scamming activities in pursuit of a particular goal he set for himself is indicative of the player-driven nature of virtual worlds and the ways in which this kind of configuration provides for more ‘freedom of movement,’ allowing boys to play with standard as well as transgressive masculine identities. Through a combination of legitimate trade activities, hacking others’ accounts, and scamming, Raybeams achieved his goal of earning one million clams and was able to try on a “bad boy” identity as a “dealer” of face parts and a scammer.

## **DISCUSSION**

One of our goals in this study was to apply Jenkins’ [17] notion of freedom of movement to virtual worlds. We conceptualized space as a process rather than a static entity using Leander and McKim’s [27] definition, which allowed us to examine gender play in boys’ interactions and activities. We found that virtual worlds, like video games, offer a geographical expansion of play space to their participants. But, unlike console video games, all players, boys included, establish a home base from which they start their ventures into the larger virtual world and to which they return. In contrast, the console video games described by Jenkins seem to keep players in perpetual motion towards the final goal. There is no point to return to the beginning of a video game, rather you continue where you left off or died the last time and climb to higher levels. All our case study players developed home bases and then routines as they entered and navigated Whyville; what changed was the destination of their navigation. Different places such as the trading post became temporary centers of activity for shorter or longer time periods before players moved on to other things. The notion of a home base is interesting since much of the literature on the study of play has marked girls as staying close to home while boys ventured out. Perhaps this was one of the reasons why we did not observe many of the so prominently documented gender differences in previous research literature – at least not on the geographical level. These findings may be further nuanced if we include RPGs and MMORPGs in our discussion, since they fall somewhere between console video games and virtual worlds.

Another goal was to understand boys’ play on their own terms rather than to essentialize them. Whyville’s demographics (68% girls) made it an ideal site for observing boys engaged in ‘borderwork,’ [46]. We found that while boys generally show a strong preference for the same activities as girls in Whyville, including chatting, y-mail, and avatar design activities, there were qualitative differences in how boys engaged in these activities. For instance, Vulcan61 spent more time engaged in avatar design related activities while Raybeams became a specialized dealer of hard-to-find face parts and made lots of clams by hacking and scamming other players. Had we simply looked at boys’ play using quantitative methods, we would not have uncovered these subtle but important differences because they were all collapsed within the “face” category. Our findings confirm that while gender is an important component of tween play in virtual worlds, expertise is equally important [9]. Raybeams’ player profile is more similar to that of Bluwave, a central girl player [12] who also engaged in scamming, than it is to either Masher47 or Vulcan 61. Yet, we also found aspects of boys’ play in Whyville.net that closely resembled boys rough and tumble play and playground chase games, which might have been obscured had we been looking comparatively at boys and girls play.

In this context, our research offered the possibility to examine notions of masculinity in boys' play [2, 26, 35, 39, 47]. Our focus age group, namely tweens, is of particular relevance given their developmental transition from childhood into adolescence. We found that boys used their avatar designs as a way to literally "try on" different versions of masculinity. In addition, boys' projectile play allowed them to play with mainstream understandings of masculinity. At times they engaged in the virtual equivalent of a rough and tumble chase game (accompanied by equally physical activity in the gaming club itself) while at others they jokingly threw heart and kiss projectiles at one another, provoking comments about their sexuality from other boys. Finally, Raybeams' scamming provided us with an opportunity to examine transgressive play and observe the ways in which a virtual realm like Whyville.net allowed him to try on a "bad boy" persona without real consequences. In these ways boys were able to use Whyville.net as a space where they could try on masculine identities and determine which ones worked for them without the consequences of doing so in a real world environment.

In conclusion, virtual worlds offer another space for the expression of boys' culture, including hierarchical play, peer recognition, competition, violence, humor, and independence. Because virtual worlds do not have a singular storyline or end goal, individuals and groups of players have opportunities to move about freely and create their own pathways but also recreate much of the gendered play found on the playground. The shifts we observed in participation over time, like Raybeams' transition from being a relatively low-profile player to a scammer and Whyville millionaire, and the contextualized meanings that developed around activities like projectile throwing contributed to our understanding of how boys leveraged freedom of movement in virtual worlds. It is important to bear in mind, in keeping with our understanding of space as process, that these meanings are always shifting and changing over time. A more recent study of play in Whyville suggests that projectile throwing is no longer a big deal. Thus, our analysis provides just one snapshot of how space is populated within Whyville.net at a particular moment in time. In this way, drawing on DeVane and Squire [9], virtual worlds as fourth spaces are possibility spaces.

#### ACKNOWLEDGEMENTS

The data collection for this case study was supported by a grant of the National Science Foundation (NSF-0411814) and the analyses and writings in part by a grant of the MacArthur Foundation to the first author. The views expressed are those of the authors and do not necessarily represent the views of the National Science Foundation, MacArthur Foundation, the University of Pennsylvania, the University of California, Los Angeles, or Numedeon. Numedeon, Inc., the company that owns and hosts Whyville.net, has no control over the publication of the

results. The authors have no financial interest or any other official relationship with Numedeon, Inc. We appreciate Numedeon's willingness to cooperate in the research studies and to provide access to their log file data. Special thanks to Michael Giang who taught us how to use SPSS to sort through logfiles and Cameron Aroz and Tina Tom who assisted in reducing the clicks and chat to first minute-by-minute and finally daily summaries. We also thank Deborah Fields for her comments on earlier drafts.

#### REFERENCES

1. Beavis, C. & Charles, C. (2005). Challenging notions of gendered game play: Teenagers playing The Sims. *Discourse: Studies in the cultural politics of education*, 26(3), 355-367.
2. Burrill, D.A. (2008). *Die Tryin': Videogames, masculinity, culture*. New York: Peter Lang.
3. Carr, D. (2005). Contexts, gaming pleasures, and gendered preferences. *Simulation & Gaming*, 36(4), 464-482.
4. Cassell, J. & Jenkins, H. (1998). Chess for girls? Feminism and computer games. In J. Cassell & H. Jenkins (Eds.), *From Barbie to Mortal Kombat: Gender and computer games* (pp. 2-45). Cambridge, MA: The MIT Press.
5. Cassell, J. & Jenkins, H. (Eds.). (1998). *From Barbie to Mortal Kombat: Gender and computer games*. Cambridge, MA: The MIT Press.
6. Castronova, E. (2001/2005). Virtual worlds: A first hand account of market and society on the Cyberian Front. In K. Salen & E. Zimmerman (Eds.), *The Game Design Reader* (pp. 814-865). Cambridge, MA: The MIT Press.
7. Consalvo, M. (2007). *Cheating: Gaining advantage in video games*. Cambridge, MA: MIT Press.
8. Denner, J. & Campe, S. (2008). What games made by girls can tell us. In Y.B. Kafai, C. Heeter, J. Denner, & J.Y. Sun (Eds.), *Beyond Barbie & Mortal Kombat: New perspectives on gender and gaming* (pp. 129-144). Cambridge, MA: The MIT Press.
9. DeVane, B. & Squire, K. (2008). The meaning of race and violence in Grand Theft Auto: San Andreas. *Games and Culture*, 3(3-4), 264-285.
10. DiSalvo, B.J., Crowley, K. & Norwood, R. (2008). Learning in context: Digital games and young Black men. *Games and Culture*, 3(2), 131-141.
11. Feldon, D. & Kafai, Y.B. (2008). Mixed methods for mixed reality: Overcoming methodological challenges to understand user activity in a massive multi-user virtual environment. *Educational Technology Research and Development*, 56(5&6), 575-593.
12. Fields, D.A. & Kafai, Y.B. (2009). A connective ethnography of peer knowledge sharing and diffusion in a



tween virtual world. *International Journal of Computer Supported Collaborative Learning*, 4, 47-68.

13. Fields, D.A. & Kafai, Y.B. (2008). *Knowing and throwing mudballs, hearts, pies, and flowers: A connective ethnography of gaming practices*. Paper presented at the 8th International Conference of the Learning Sciences, Utrecht, Netherlands.

14. Flanagan, M. (2006). Making games for social change. *AI & Society*, 20, 493-505.

15. Gee, J.P. (2003). What video games have to teach us about learning and literacy. New York: Palgrave MacMillan.

16. Hine, C. (2000). *Virtual ethnography*. London: Sage.

17. Jenkins, H. (1998/2005). Complete freedom of movement: Video games as gendered play spaces. In K. Salen & E. Zimmerman (Eds.), *The Game Design Reader* (pp. 330-363). Cambridge, MA: The MIT Press.

18. Kafai, Y.B. (2008). Synthetic play: Girls and boys gaming together and apart in teen virtual worlds. In Author 2, C. Heeter, J. Denner, & J.Y. Sun (Eds.), *Beyond Barbie & Mortal Kombat: New perspectives on gender and gaming* (pp. 1-16). Cambridge, MA: The MIT Press.

19. Kafai, Y.B. (1995). *Minds in play: Computer game design as a context for children's learning*. Hillsdale, NJ: Lawrence Erlbaum Associates.

20. Kafai, Y.B., Cook, M.S., & Fields, D.A. (2007). "Blacks deserve bodies too!" Design and discussion about diversity and race in a tween virtual world. In A. Baba (Ed.), *Situated play: Proceedings of the Third International Conference of the Digital Games Research Association (DiGRA)* (pp. 269-277). Tokyo, Japan: The University of Tokyo.

21. Kafai, Y.B. & Fields, D.A. (forthcoming). Navigating life as an avatar: The shifting identities-in-practice of a girl player in a tween Virtual World. In C. C. Ching & B. Foley (Eds.) *Constructing identity in a digital world*. Cambridge University Press.

22. Kafai, Y.B. & Giang, M. (2007). Virtual playgrounds: Children's multi-user virtual environments for playing and learning with science. In T. Willoughby & E. Wood (Eds.), *Children's Learning in a Digital World* (pp. 196-217). Oxford, UK: Blackwell Publishing.

23. Kafai, Y.B., Giang, M., & Fields, D.A. (in press). *Girl Players: Portraits of Participation and Positionings in a Tween Gaming Club*. Paper presented at the Annual Meeting of the American Educational Research Association, New York, NY.

24. Kafai, Y.B., Heeter, C., Denner, J. & Sun, J.Y. (Eds.). (2008). *Beyond Barbie & Mortal Kombat: New perspectives on gender and gaming*. Cambridge, MA: The MIT Press.

25. Kelleher, C. (2008). Using storytelling to introduce girls to computer programming. . In Y.B. Kafai, C. Heeter, J. Denner, & J.Y. Sun (Eds.), *Beyond Barbie & Mortal Kombat: New perspectives on gender and gaming* (pp. 247-264). Cambridge, MA: The MIT Press.

26. Kendall, L. (2002). Hanging out in the virtual pub: Masculinities and relationships online. Los Angeles: University of California Press.

27. Leander, K.M. & McKim, K.K. (2003). Tracing the everyday 'sittings' of adolescents on the Internet: A strategic adaptation of ethnography across online and offline spaces. *Education, Communication, & Information*, 3(2), 211-240.

28. Lefebvre, H. (1991). *The Production of Space*. Malden, MA: Blackwell Publishing.

29. Lenhart, A., Kahne, J., Middaugh, E., Macgill, A.R., Evans, C., & Vitak, J. (September 16, 2008). *Teens, video games, and Civics*. Washington, D.C.: Pew Internet & American Life Project.

30. Leonard, D. (2003). "Live in your world, play in ours": Race, video games, and consuming the other. *Simile*, 3(4), 1-11.

31. Leonard, D.J. (2006). Not a hater, just keepin' it real: The importance of race- and gender-based game studies. *Games and Culture*, 1(1), 83-88.

32. Lin, H. (2008). Body, space, and gendered gaming experiences: A cultural geography of homes, cybercafés, and dormitories. In Y.B. Kafai, C. Heeter, J. Denner, & J.Y. Sun (Eds.), *Beyond Barbie & Mortal Kombat: New perspectives on gender and gaming* (pp. 67-82). Cambridge, MA: The MIT Press.

33. Opie, I.A. & Opie, P. (1997). *Children's games with things: marbles, fivestones, throwing and catching, gambling, hopscotch, chucking and pitching, ball-bouncing, skipping, tops and tipcat*. New York: Oxford University Press.

34. Orr Vered, K. (1998). Blue group boys play Incredible Machine, girls play hopscotch: Social discourse and gendered play at the computer. In Sefton-Green, J. (Ed.), *Digital diversions: Youth culture in the age of multimedia* (pp. 43-61). New York: Routledge.

35. Pascoe, C.J. (2007). *Dude you're a fag: Masculinity and sexuality in high school*. Los Angeles: University of California Press.

36. Pellegrini, A.D. (1995). A longitudinal study of boys' rough-and-tumble play and dominance during early adolescence. *Journal of Applied Developmental Psychology*, 16, 77-93.

37. Provenzo, E.F. (1991). *Video kids: Making sense of Nintendo*. Cambridge, MA: Harvard University Press.

38. Reed, T.L. (2005). A qualitative approach to boys' rough and tumble play: There is more than meets the eye.

- In F.F. McMahon, D.E. Lytle, & B. Sutton-Smith (Eds.), *Play: An interdisciplinary synthesis* (pp. 53-72). Lanham, MD: University Press of America.
39. Rotundo, E.A. (1998). Boy culture. In H. Jenkins (Ed.), *The children's culture reader* (pp. 337-362). New York: NYU Press.
40. Sanford, K. & Madill, L. (2006). Resistance through video game play: It's a boy thing. *Canadian Journal of Education*, 29(1), 287-306.
41. Squire, K. (2006). From content to context: Videogames as designed experience. *Educational Researcher*, 35(8), 19-29.
42. Stevens, R., Satwicz, T., & McCarthy, L. (2008). In-Game, In-Room, In-World: Reconnecting video game play to the rest of kids' lives. In K. Salen (Ed.), *The ecology of games: Connecting youth, games, and learning* (pp. 41-66). Cambridge, MA: The MIT Press.
43. Sutton-Smith, B. & Avedon, E.M. (1971). *The study of games*. New York: J. Wiley.
44. Taylor, N., Jenson, J. & deCastell, S. (2007). Gender in play: Mapping a girls' gaming club. In A. Baba (Ed.), *Situated play: Proceedings of the third international conference of the digital games research association (DiGRA)*. Retrieved February 20, 2009 from <http://www.digra.org/dl/db/07312.27373.pdf>.
45. Taylor, T.L. (2006). *Play between worlds*. Cambridge, MA: The MIT Press.
46. Thorne, B. (1993/1998). *Gender play: Girls and boys in school*. New Brunswick, NJ: Rutgers University Press.
47. Walkerdine, V. (2007). Video games and childhood masculinity. In V. Walkerdine, *Children, gender, video games: Towards a relational approach to multimedia* (pp. 30-47). New York: Palgrave Macmillan.
48. Van Vliet, W. (1983). Exploring the fourth environment: An examination of the home range of city and suburban teenagers. *Environment and Behavior*, 15, 567-588.
49. Yee, N. (2008). Maps of digital desires: Exploring the topography of gender and play in online games. In Y.B. Kafai, C. Heeter, J. Denner, & J.Y. Sun (Eds.), *Beyond Barbie & Mortal Kombat: New perspectives on gender and gaming* (pp. 83-96). Cambridge, MA: The MIT Press.