

A Hybrid Cultural Ecology: World of Warcraft in China

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ABSTRACT

We analyze online gaming as a site of collaboration in a digital-physical hybrid. We ground our analysis in findings from an ethnographic study of the online game World of Warcraft in China. We examine the interplay of collaborative practices across the physical environment of China's Internet cafes and the virtual game space of World of Warcraft. Our findings suggest that it may be fruitful to broaden existing notions of physical-digital hybridity by considering the nuanced interplay between the digital and physical as a multi-dimensional environment or "ecology". We illustrate how socio-economics, government regulations and cultural value systems shaped a hybrid cultural ecology of online gaming in China.

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

General Terms

Human Factors, Design.

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Hybrid ecology, virtual worlds, games, ethnography, mixed reality, World of Warcraft.

INTRODUCTION

Imagine. Beijing, Friday 7pm, a hot summer evening. Stifling subways bustle with commuters leaving work, many on their way to the city's entertainment centers. "Bye bye", Shu waves at her coworker as she exits Dongzhimen subway station. She lives close by, but is heading first to a favorite bar. Along the way, Shu passes fashionable

clothing stores, street vendors offering fresh fruits and DVD copies of the latest Hollywood movies. Shu stops in front of her destination, one of many buildings that have sprouted up recently in this district, below a lighted sign advertising a bar on the fifthth floor: not a drinking bar, but a wang ba, i.e., "net bar" or "Internet café". Shu pulls out her cell phone. Somebody at the other end answers. "You still there?" Shu asks. She nods her head and hangs up the phone. The wang ba is a dark room brightened by many computer screens lined up in straight rows, one after the other. The air is filled with smoke. An air conditioner buzzes. After purchasing two hours of Internet for five RMB (.70 US), Shu spots an available seat next to one of her wang ba friends. The friend smiles at Shu, but his attention quickly turns back to the screen that displays a group of colorful creatures running one after the other up hill and down hill, a bright moon illuminating their path. Shu takes in the scene, then turns to her PC to install some updates. She starts QQ, an instant messaging client, and then logs into a game the people around her have already been playing for the last couple of hours: World of Warcraft.

In the summer of 2007, we traveled to Cina to study online gaming. For six weeks we interviewed and observed gamers in their favorite play locations including Internet cafes, student dormitories, and homes. A striking aspect of gaming in China is that the most common site of play is the Internet café, or wang ba. We wanted to understand how collaborative practices in and around the game are shaped by the contexts in which they take place and what such understandings might tell us about computer-mediated sociality and collaboration more generally.

To analyze our data, we turned to recent work on collaborative systems that examines interaction through physical and digital artifacts [5, 14, 15, 21, 26] in systems termed "mixed reality" [26, 32], "hybrid ecology" [14], "hybrid reality space" [15], and "digital-physical assemblies" [21]. This body of work recognizes and analyzes the mixed or hybrid materiality of computer-mediated social spaces. Examples provided in this work often include urban computing games that require collaboration between mobile players with handheld devices in public space and remote players in front of a

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computer [5, 14]. They highlight the compound physical-digital materiality of computer-based social spaces, a key aspect of the Chinese gaming scene.

In our opening vignette, Shu is not merely sitting in front of the computer interacting with the game software or coordinating with others who share a space of digital awareness. Instead, we find her enmeshed in the rich and messy complexities of a present-day ubi-comp environment [4]: she contacts a fellow player on her cell phone while walking down a street itself replete with technological culture; she plays World of Warcraft in a specific kind of place, the Chinese *wang ba*; she mixes use of software modifications and instant messaging with the software of the game itself and engages with other players in face-to-face communication. This scenario pushes the horizon of analysis out from the user and the computer, out from users in a space of mutual digital activity, to a large-scale physical-digital space in which collaboration occurs through and with diverse, mixed, and situated resources.

In this paper, we adopt and extend Crabtree and Rodden's "hybrid ecology" approach to the analysis of the physical-digital interplay of WoW and its socio-technical contexts in China. Hybrid ecologies are "spaces that merge the physical and digital" to facilitate collaboration [14]. They exploit "affordances of mixed reality and ubiquitous computing environments to extend the purchase of computing across multiple environments, physical and digital." The word "hybrid" references composite technological materials made available to designers and users, and "ecology" a dynamic and emergent system of interdependent elements, layers, and flows.

The ecology metaphor has been deployed in previous approaches such as "information ecologies" [28] and "media ecologies" [20] that stress the continuously evolving nature of socio-technical environments, beyond mere arrangements of technologies. Fuller, for example, provided an account of a pirate radio that rendered visible "more than just the radio's constitutive technologies, rather a whole interrogative field of social, legislative, political and economic formations" [20]. He drew attention to political agendas that motivated the pirate radio station and how these agendas co-evolved with machine protocols, laws and economics. Similarly, Nardi and O'Day incorporated social values and policies as key elements of information ecologies [28].

Work on information or media ecologies points to the need to examine hybrid ecologies not only in terms of distributed material affordances, but also in terms of legal, political, and economic structures impinging heterogeneously throughout the system. Building on this work, we use the notion of a "hybrid cultural ecology" as an analytical device to draw attention to the connections, tensions and cultural value systems across digital and non-digital artifacts and environments, and to the various orientations toward a

hybrid technological system, its affordances and appropriations.

The notion of a hybrid cultural ecology, then, is intended to do the following conceptual work: to address the ways in which physical and digital hybrids comprise the environment in which collaboration occurs, and, to emphasize cultural practices that enable collaboration in such an environment to fruitfully occur. In order to assess the nature of the hybrid cultural ecology of gaming in and around China's *wang ba*, we will address the following questions: Which dimensions of the hybrid cultural ecology were crucial for collaborative practices in and around the *wang ba*? How did players collectively shape physical-digital hybrids to make them meaningful for their particular local context? Which cultural and social value systems influenced the nature of emerging hybrids?

HYBRIDS, ASSEMBLIES AND INFRASTRUCTURES

One of the earliest efforts to classify hybrid technological systems evidences in work on mixed reality systems. Milgram and Kishino, for example, established the notion of mixed reality as a "subset of virtual reality related technologies" in order to create a taxonomy of the various instantiations of technological systems that merge "real and virtual worlds along the virtuality continuum, which connects completely real environments to completely virtual ones" [26]. More recent approaches on hybrid realities are concerned with the ways in which various technologies and non-digital artifacts merge in different situations and across multiple systems [5, 14, 15, 21, 22].

Hindmarsh *et al.*, for example, explore user reactions to digital and physical co-presence and people's positionings within an "assembly" of technologies through an interactive museum installation [21]. One of the main goals of the system was to unpack how people collaboratively explore, discover, encounter and experience the material environment. Similar to Crabtree and Rodden's concept of hybrid ecology, the notion of assemblies is not only concerned with designing new complex technological systems, but also with how these systems fuse with "existing arrays of objects and technologies."

Along similar lines, Mainwaring *et al.* [24] call attention to the importance of pre-existing infrastructures, from the electrical grid to public schools, in enabling, enforcing, or frustrating individual and group routines, according to "fit" between the values implicit in the infrastructure's design vs. in the people's goals. Their analysis of people seeking to reconfigure their relationship to particular problematic infrastructures pointed to processes of assimilation and accommodation in infrastructure use, choice, and assembly more generally.

Crabtree and Rodden's notion of hybrid ecology opens a conceptual space for expansive analysis and development of collaborative systems by drawing attention to situated interactions in which the physical and digital encounter one

another [14]. In extending this approach to hybrid cultural ecologies, we stress the cultural, social, and contextual assemblies and infrastructures that shape and are being shaped by the digital-physical environment.

METHODS

In July and August 2007, we conducted ethnographic fieldwork on collaborative practices in and around the online game World of Warcraft (WoW) in China. By “in and around” we mean we studied not just the ways players played WoW, but also surrounding practices and events, such as the use of external software modifications enabled as plug-ins, the pre-existing social relationships people took into the game and the penetration of government regulation into the game. Over a period of six weeks we observed and interviewed players in Internet cafes, university dormitories, and apartments in Beijing, Shanghai, Hangzhou, and Chengdu. Data were comprised of observations, informal conversations, and semi-structured interviews.

We split into three groups to cover diverse game locations and player demographics. The third and fourth author conducted interviews in all four cities. The first author conducted interviews with translation by a Chinese-American collaborator in Beijing and Shanghai. The second author conducted interviews in Beijing with the fifth and sixth authors who are native speakers of Chinese. We interviewed 80 people, 56 male and 24 female. Study participants had diverse backgrounds including students, a factory worker, a middle school teacher, a bank employee, a nurse, a marketing supervisor, a vice president of design for a Chinese game company, and owners of software stores, news kiosks, and *wang ba*. Study participants ranged in age from 18 to the late 50s, although most were in their twenties. All study participant names in this paper are pseudonyms.

In the semi-structured interviews we questioned study participants about many dimensions of their gaming experience. We asked players how they got started playing, about their previous gaming experience, what they liked and disliked about WoW, whether they played with people they knew in real life, whether they had made friends online and in *wang ba*, whether they belong to a guild, and if so, the kinds of experiences they had in their guild. We discussed the use of game-related software extensions and websites, forums, and wikis external to the game. We asked game-specific questions about character choice, naming of characters, game activities participants liked. We asked what players would change about the game if they could. We followed up conversational leads as they arose, consistent with standard ethnographic practice, so each interview had a unique profile.

Participants were acquired through our own social networks and through serendipitous encounters in *wang ba* or places where game-related merchandise such as game magazines were sold, e.g., shopping malls or small street vendors.

Most of our observations and interviews were conducted in the *wang ba*. When possible, we asked the café owner or manager if it was OK for us to interview. We were never refused and were always treated cordially. In some cases we struck up casual conversations with owners or managers and sometimes subsequently conducted more formal interviews with them. We approached players in the *wang ba* and asked if they would have time for an interview. Most interviews lasted about an hour although some were longer. We sometimes sat beside study participants and watched them play, asking them questions about their game activities as well as the standard questions. In some cases we took study participants to dinner or to a nearby restaurant for soft drinks or a snack. We also conducted interviews in student dormitories and private homes. These interviews tended to be longer and included informal conversation that provided background on the study participant's life.

WORLD OF WARCRAFT

WoW, produced by Blizzard Entertainment, recently reached 10 million players. According to Blizzard, there are 2 million players in Europe, more than 2.5 million in North America, and approximately 5.5 million in Asia [7]. WoW is available in English, Spanish, French, German, Korean, and simplified and traditional Chinese, with a Russian version in development. A growing body of scholarly research documents the game, e.g. [2, 18, 19, 27, 36, 37].

In WoW, players create and develop an animated character in a setting derived from the fantasy game Dungeons and Dragons [2]. Game activities include slaying monsters, fighting other players, and participating in a vibrant in-game economy. Although the game can be played alone, WoW is fundamentally a social game. Blizzard provides distinctive mechanisms of collaboration for a variety of social forms including among others guilds, parties, and raids.

FINDINGS

We begin by examining the hybrid cultural ecology of gaming in China as a digital and physical space of collaboration in the *wang ba*. We then provide an account of some dimensions of the ecology beyond material and spatial aspects. We analyze practices of collaborative learning and emergent sociality, the hybrid assemblies of technologies players pull together to express trust and affect, and a sociopolitical context centered on regulatory control over the gaming experience.

The physical-digital game space of the *wang ba*

Multiplayer online games such as World of Warcraft have often been understood as places distinct from “real life” in which people socialize and collaborate with others remotely [2, 34]. Players are said to enter “cyberspace,” or a “virtual world,” or a “metaverse.” These notions suggest a sharp distinction between interaction in a physical environment

and interaction in a virtual environment [11, 16, 25]. In our analysis of online gaming in the *wang ba*, instead of drawing on the distinctions between digital and physical environments, we wish to highlight their mutual efficacy. As Agre observed, "As long as we persist in opposing so-called virtual communities to the face-to-face communities of the mythical opposite extreme, we miss the ways in which real communities of practice employ a whole ecology of media as they think together about the matters that concern them" [1]. We found *wang ba* to be dynamic sites of collaborative play in which gaming was experienced through an interplay of both digital and physical elements.



Figure 1 Room in a student dormitory in Beijing.

Wang ba are the second most frequent site of computer usage in China after the workplace [13] and thus constitute an important site of everyday activity for millions of people in China's urban and rural areas. *Wang ba* ranged in style from up-scale businesses located in modern shopping malls and equipped with high-end computer terminals, to low-end establishments hidden in basements or in tiny rooms above noisy restaurants. Thomas and Lang reported that Chinese players go to Internet cafes to access not only the Internet but also their close friends and peers [33]. While we found similar evidence, we also found that living spaces and family dynamics impacted decisions about where to play. Rooms in student dormitories we visited were shared by 4 to 8 people and fit no more than a bed for each student also used as workspace (see Figure 1). Many young professionals live at home with their parents until they are married. Small living spaces as well as parental disapproval of game play rendered the local public play space in Internet cafes an attractive choice. Our findings are consistent with those of Thomas and Lang [33], who noted that *wang ba* "have emerged as the place for urban Chinese youth to be youth [and] as one of the few places young urban Chinese can escape the pressures of schooling, work and their parents." Players also reported choosing *wang ba* because either they did not own personal computers, or had low Internet bandwidth and/or low-end computer equipment. *Wang ba* provided high-end equipment and bandwidth that made game play more enjoyable.

Gaming in the *wang ba* was experienced in a hybrid ecology in which the digital space of the game blended with the physical space of the café. Players commented on important aspects of the physicality of the *wang ba*, remarking that they enjoyed the provision of food, soft drinks, cigarettes, and air conditioning which afforded relief from the summer heat. Sometimes odd or humorous juxtapositions of the physical and virtual occurred as at one Internet café at the train station in Hangzhou, which offered foot massage and Internet access right next to each other (see Figure 2).



Figure 2 *Wang ba* and foot massage at train station in Hangzhou.

Visitors would often choose one or two *wang ba* as their favorite game locations. The choice for a particular *wang ba* often depended on personal identification with the place's image and familiarity with its visitors and owners, displaying a distinct gaming culture at each café. Physical proximity and shared context outside of the game also shaped friendships established online. For example, many of participants in our study felt closer to online friends who lived in the same neighborhood or to in-game friends whom they met regularly at the same physical location for playing online games. Chenguang, for example, expressed feelings of safety and familiarity with respect to other players living in her neighborhood:

The ones I feel comfortable meeting offline are the ones that live close to me and we have played together for a long time... Just because we are good online friends doesn't mean we are good friends in real world as well.

One of the most important aspects of the physicality of the *wang ba* was the presence of other people. The social atmosphere of the *wang ba* was crucial to players' in-game experiences and to interactions outside of the game. A young business professional we interviewed, who had good computer equipment in his apartment, preferred playing in the *wang ba*, explaining, "Home has no atmosphere." Another player, Hui, said:

I enjoy playing at the café because there are more people, it's more exciting. Most of the guild activities are at night, so the people all show up late in the Internet café. I enjoy the atmosphere of people playing around me.

Guild members sometimes met face-to-face in the *wang ba* to play together. Often guild members living in the same city knew each others' phone numbers and called each other to coordinate play times in the *wang ba*. The physicality of the Internet café, then, was an important part of Chinese gamers' experiences. The virtual experience of the game itself was equally compelling. Players often commented on WoW's graphics, well-drawn animations, landscapes and architecture. Several players mentioned that WoW provided a "glimpse" into Western culture. Changming, a 21-year-old student from Beijing University noted that WoW introduced him to Western elements of storytelling:

I learned several things about the West. WoW has a Western story, which is different from Eastern stories and history... The game belongs to the whole Western culture. The races [character types] are an example. Some races like gnomes, dwarves and elves,... are described in European myths. Their dragons are different than ours. Western dragons are evil while Chinese dragons stand for happiness. Mages, druids, and so on originate from Western myths, and are relevant to the whole Western myth of the story. This game, in the aspect of using Western myths, is very successful... If there is only fighting in the game, it is less interesting. The key is that a large story background supports the whole game.

We observed the digital-physical hybrid of the *wang ba* as the *blend* theorized by Crabtree in Rodden, and not simply two separate worlds coming into contact. For example, players sitting next to one another in the *wang ba* enjoyed exploring the digital landscape together or engaging together in the game narrative through both face-to-face and in-game interaction. Chenguang, for example, told us:

My guild members and I play combat and then we rest and look at the area together. We explore the graphics and wander through different areas. To get equipment is a lot of work. It is very tiring. Looking at the scenery is recreational.

Ju and Gen, sitting next to one another in the *wang ba*, commented on the collaborative nature of raids and the game's affordance to collectively explore the content:

Ju: Individual heroism is more common in Chinese online game than in WoW. Many Chinese games focus more on the fighting between players. In WoW, players play together in raids and can fight against the monsters.

Gen: This online game is designed based on an existing story, while other games are created with the story. And this makes WoW much more real. And the story is in the details... I just enjoy WoW more, so that's why I play it more often. Even though the storyline and history are made up, the game play becomes more meaningful.

What we would like to underscore here is that collaborative practices often emerged at the intersection of immersion in the game - enjoyment of game aesthetics, the game's story,

in-game tasks - and shared experiences in the *wang ba*. Interaction and collaboration with others was grounded in deep engagement with the gaming culture in WoW, the community and player culture at the particular *wang ba* and the cultural contexts associated with the game itself, such as the "Western" story. Ju pointed out the collaborative nature of the raid, comparing it to the "individual heroism" more common in Chinese online games. Gen mentioned the "meaningfulness" and "realness" of the narrative. These interpretations of game experience took as a given that people sitting next to one another in a physical space could create shared meaning in the virtual space of an online game.

Chinese players transitioned between visual and social immersion online, and the social and physical context of the *wang ba*. Transitioning between both contexts was so fluid and effortless that we see it as a true "merging" of physical-digital environments, as Crabtree and Rodden put it [14]. While in some settings game play may take place primarily in a digital context, experience in the *wang ba* stresses the mutual efficacy of game play in the digital realm and the physical context of the *wang ba*. Our findings, then, support the framings of [1, 14, 20] in turning our attention to emerging digital-physical environments as key sites of collaboration.

Collaborative Learning

In the *wang ba*, players had access to others who helped them advance in the game. Players sitting close to each other shared in-game experiences and provided mutual support for advancing in the game. These interactions in the physical space provided resources for collaborative learning enacted across the digital-physical hybrid of the online game and the *wang ba*. We observed players intentionally sitting down next to people playing WoW so they could talk to them (see Figure 3), even if they didn't know them. Sometimes people would even ask other players to shift a few seats to allow them to sit next to a fellow player. Chuanli explained why he enjoyed sitting next to WoW players, and how players got to know one another:

If there is an empty seat next to a WoW player I go over there to sit next to him—even though it is in a really crowded area. We look at each other's equipment and have a conversation about it. Sometimes we exchange seats with other people so that we [WoW players] can sit closer to each other. If I am playing by myself I am bored and leave the Internet café. The people here are nice, we play together, they all live around here. We know each other from playing the game.

Players used conversations in the *wang ba* to learn from each others' playing expertise. Although Chuanli's comment about equipment appears very casual, hardly related to learning, a key player goal in WoW is to acquire better equipment. Players constantly talk about equipment and how to improve it. In sitting next to a fellow player and

examining his equipment, and conversing with him about it, Chuanli has a chance to pick up useful information.

The *wang ba* also constituted an environment for an emergent sociality among players. As we see in Chuanli's case, casual interactions among players in the *wang ba* stimulated collaborative learning through exchange of useful in-game information. At the same time, however, Chuanli stresses the importance of other players' presence: "if I am playing by myself, I am bored..."

This quote resembles what Brewer *et al.* described as gaining expertise as a member of a social group through long-term participation in the culture of the shared place. In their findings from studies on two public transportation systems, Brewer *et al.* illustrate how learning to "appropriately" ride the tube in London or the bus in Orange County, California, was dependent on mutual awareness of each others' practices, how these evolved over time and how they contributed to the character of the public space [8]. Similarly, players in the Chinese *wang ba* developed over time a mutual understanding of what play in the *wang ba* constituted. Becoming a knowledgeable player in the *wang ba* entailed participating in the hybrid collaborative learning practices described above. It also meant to learn how to engage in the culture of the physical space of the *wang ba*, such as negotiations around where to sit and how to approach other players.



Figure 3 Players in *wang ba*.

The notion of a separate realm of "cyberspace", then, does not fully capture the game experience of players such as Chuanli. They draw on both face-to-face interaction in the physical space of the Internet café as well as the virtual world of the game which provides a shared gaming experience. In the hybrid cultural ecology of WoW, learning how to advance in the game, but also learning what it means to participate in WoW's gaming community, was achieved through simultaneous participation in both the digital environment of the game and the physical environment of the *wang ba*. Chuanli noted that the players he sat with "all live around here." At the same time, he said, "We look at each other's equipment." This "equipment"

was purely virtual, existing only in the digital space of the game.

Meaningful conversation centered around cultural takings from the digital space, sustaining physical interaction within the *wang ba*. Lei, for example, explained how he learned from more experienced players by sitting beside them:

I know a few people here [in the wang ba], but they are not on the same server. They have already done most of the difficult raids [an advanced game activity] and they lead these raids. They also have a lot of equipment. So I sit next to them and talk to them while they are playing and see how they are playing the game...

I am in a guild with my coworkers. Every guild member has certain roles he is expected to know already and things he is responsible for. I am judged based on these things.

Several study participants reported that they preferred learning from casual contacts in the *wang ba* rather than seeking advice from guild mates. Lei's guild was composed of co-workers from his real life job. As a guild member, he was expected to complete certain tasks efficiently in the game. It was particularly important to him to perform capably in-game in front of people who were both co-workers and guild mates. His relationship with players in the *wang ba* on the other hand, was based on face-to-face interactions outside of the game. Lei learned from his *wang ba* friends through observation and advice, and his in-game performance was not at stake. Café owners and managers also helped players learn WoW (and other games). Most were knowledgeable about games, and players found them a valuable resource. Asking casual contacts in the café for help was a way for some players to avoid admitting weakness in the context of guild interaction and a convenient, enjoyable means of learning from more advanced players.

Trust

In the *wang ba*, players used a mix of digital artifacts and software tools, such as external chat clients, in-game chat clients, mobile phone numbers, and virtual characters, as well as resources in the *wang ba* to engage in a rich play experience. The "game" was not simply the software files downloaded on a player's machine or accessed at the *wang ba*; it was, rather, a collage of artifacts and data collectively assembled by its engaged participants. For example, for many players exchange of real life data, such as mobile phone numbers, information about professional careers, and physical location allowed them to express trust in players met online. Chuanli, an IT consultant from Beijing, told us why the exchange of phone numbers played an important role to establish deeper relationships to other players:

They [online friends] believe in me, because they gave me their phone number first. If there is some news, they give me a call. If I give another player my phone number, I

must have the feeling I can trust him. I give it to them [other players] if they are trustworthy.

Another way to express trust in other online players was the “exchange” of virtual characters. Online games and virtual worlds like WoW or Second Life allow the creation of multiple characters. In WoW, people often share accounts and thus allow others to log on and play with their virtual characters. Players enjoyed this practice because it provided opportunity to explore the game space from another viewpoint, through the capabilities of an unfamiliar race, class, gender, and equipment set. In order to access each others’ characters players shared their game account ID, which was password protected and stored a player’s private data such as age, home address, and email address. Ruhong, a 22-year-old nurse, and Xiaowei, a 28-year-old employee at a distribution center, described how other players expressed trust in them through exchanging account data:

Ruhong: A few online friends trust me to the extent that they lend their accounts to me to play.

Xiaowei: It took about a year... to exchange characters. We met each other while we were killing a monster. We had some conversations and felt we got along very well. We asked each other to take care of things. Like helping each other with quests.

The ability to express trust in an online friend through means that had value outside of the game was crucial for the development of strong ties that strengthened the relationship and supported communication for challenging cooperative tasks. Experiencing the game through these shared identities allowed players to develop dependable relationships enacted across multiple software applications, the game and the *wang ba*.

In addition to the exchange of resources and real life data, the physicality of the *wang ba* itself constituted an important means to establish trustworthy relationships between players and *wang ba* owners. In China, WoW (and other online games) are paid for through “point cards” which provide a certain number of hours of play (this is in lieu of monthly subscriptions billed to credit cards as in other countries). Point cards can be purchased physically in stores or from *wang ba* attendants or “virtually” over the phone. For many players, the *wang ba* was a special place to purchase point cards as they established personal relationships with the owners. In a *wang ba* in Chengdu we met Gong, a young factory worker, who frequented the *wang ba* on a weekly basis. Gong explained why he preferred the purchase of point cards in the physical location of the *wang ba* over purchase through a phone-based system:

I trust them [the owners of the wang ba] more than the [telephone] company. I have been their customer for a long time, and they are right here [in the wang ba], whereas if the telephone company charges me more, it's hard to get

my money back... Also [with phone purchases] my family may know how much I spend on games.

The owner of the *wang ba* commented: *We are like a bank. We help our customers exchange real money for game time and we only charge a small service fee.*

Gong could easily have purchased game time through the phone-based service. However, he preferred conducting the transaction in the physical game location with the trusted café owners. The face-to-face purchase of the game time also helped Gong avoid detection of purchase by his family who may have access to his phone bill and question the amount of money and time he spent on games.

Socio-political Hybridity

In this section, we illustrate how, within a particular culturally and politically rendering of the media, players represented technological aspects in seamful ways in order to exchange interpretations of political decision making that impacted game play. The seamful representations we observed were not necessarily related to technological breakdowns [12] or articulation work [14]. Although we observed discussions around technological breakdowns and articulation work to take place in the *wang ba*, we also found complex entanglements of the technological infrastructure with societal value systems and expression of political opinion that rendered seamfulness of the media meaningful beyond the functioning of the technological infrastructure itself. Fuller [20] and Nardi and O’Day [28] suggested that policies and values are constituents of media and information ecologies. We draw on their work in examining a socio-political context in which the entertainment space of WoW made visible a regulatory governmental activity.

Video games often attract political attention. In North America, politicians hoping to score points with conservative audiences criticize violence in video games. Religious leaders frame them as dangerous and immoral [3]. In China, just before we arrived, the Chinese government required the Chinese distributor of WoW to remove images of skeletons from the game. The game graphics were changed so that skeletal characters were “fleshed out.” Images of skeletons that remained after a virtual character’s death were redrawn as large graves heaped with brown dirt, looking as though they were freshly dug.

International and national mass media outlets reported on the government’s decision to change game aesthetics to promote what the Chinese government called “harmony.” The government’s action was part of an effort to “purify the Internet of anything that might affect national cultural information security or undermine the attempt to promote a harmonious society” [17].

In this sociopolitical context, an entertainment space, brought government control and regulation to the fore. Cultural tensions between the freedom of play on the one

hand, and the state's desire to control on the other, lodged in the game. WoW became a topic of political discourse in China, being questioned in the *wang ba* and student dormitories. For example, Bingwen, an employee at a consulting firm, commented:.

Bingwen: *What's more, in China I am not quite clear about the reason [for the action], perhaps it's China's political situation. In the past when you died [in the game] there were bones and skeletons but now graves are used instead. What we were told is that the skeletons are frustrating and scaring people. But I feel graves are actually scarier.*

Skeletons have no particular traditional meaning in Chinese culture and none of the players we interviewed found them disturbing. The prominent graves, by contrast, were far more realistic and noticeable. Bingwen commented that the removal of the skeletons might be related to "China's political situation." Another study participant, Chao, discussed the concept of harmony and its relation to the government's decision to alter WoW graphics. In China, the government promotes "harmony" as a core cultural value. It is a word laden with meaning and its interpretation varies widely depending on the context in which it is used. The construal of "harmony" as Chao used it was ironic.

It's a grave, which didn't exist before. You see, there's a corpse dropping items. When you pick up those items, the corpse turns into a grave. Before... there used to be a skeleton. It is a result from the upgrade, which is part of the governmental project to introduce harmony.

Longwei was more outspoken: *We dislike the harmony such as the disappearance of skeletons... It is feudal and introduced as part of the whole cultural environment in China.*

In referring to "feudal" action, Longwei expressed a critique of government attempts to regulate culture in China. Longwei – as many other players – correlated his own experiences in the game with news about government decisions posted in national and international mass media outlets. This provided opportunity to reflect on societal norms more broadly and beyond the game.

DISCUSSION

Our analysis of WoW in China as a hybrid cultural ecology of gaming suggests that we pay attention to the multi-dimensional interplay between digital and physical environments. In our observations, players established their own meaningful connections, individually and collectively, between the online game, software resources, game modifications, and the *wang ba* and its social and spatial contexts. These connections, however, were not rigid bridges could not be broken down or be re-built elsewhere. Rather players assembled a variety of digital and physical artifacts and interrelated them based on individual preferences, requirements of the social group players belonged to (for example, guild or friends from college), societal norms and in-game goals.

What we see at work in these examples of hybrid ecology of gaming is an active form of participation and opportunity for action upon pre-designed boundaries of technologies and software, and upon regulatory systems in society. Collaborative activities across the hybrid cultural ecology of gaming were not always oriented towards achievement of in-game goals or coordination among players. Rather, players exchanged information, data and resources using a variety of technologies in order to express affection towards game play, trust in other players and critique upon regulations.

Unpacking Hybridity

Online games like WoW are often analyzed through their desktop interface and thus distinguished from technologies associated with urban computing systems such as the mobile phone and WIFI infrastructures. De Souza e Silva suggested "hybrid spaces arise when virtual communities, previously enacted in what was conceptualized as cyberspace, migrate to physical space because of the use of mobile technologies as interfaces" [15].

In *wang ba*, we found a physical-digital hybrid environment that was not restricted to use of mobile devices. Rather, it incorporated a mix of multiple technologies and software resources such as stationary PCs in the *wang ba*, mobile phones, instant messaging, and websites. The key here is that these technological resources form a vast ecology. Instead of designing single user interfaces for mobile devices for a universal hybridity, it would be a worthwhile pursuit to consider designs, which offer people a choice among a variety of digital and non-digital resources and to allow people to make various connections between them for individual and collective uses.

Our findings, then, also support previous research on seamful interweaving and heterogeneous media use and content [12, 29]. Chalmers and Galani, for example, suggested that the "seams of infrastructure and connections between media often show through in interaction... people build up their own understanding and use over time, relating a new system to their own use of heterogeneous systems and spaces" [12]. We found similar aspects of heterogeneous entanglements as visible in our descriptions of digital, physical, social, cultural and political aspects and their interrelationships in and beyond the *wang ba*. In the examples presented in this paper, the depth of social interactions and collaborative practices that people engaged in has a wide range including both, smooth transitioning [23] and seamful interweaving [12]. Sometimes players transitioned smoothly between software resources, such as instant message, guild websites, in-game groupings, and activities in the physical game space. At other times the technological components and their connections were brought to the fore when players explained game rules or governmental regulations in the *wang ba*.

Chalmers and Galani suggested allow a certain level of heterogeneity "when users have different past experiences

to draw from, when they have different tools available and yet wish a shared experience, and when the designer's and the users' interest is in the ambiguous or contradictory" [12]. Our findings pointed us to an additional dimension of heterogeneity as a worthwhile pursuit to consider for future design work: we suggest that design for heterogeneity should not only allow varied interpretations of the tool itself, but also support users to establish connections between different interpretations and institutional representations of the tool and its local meanings.

For example, the ability to establish heterogeneous links between governmental rhetoric, national and international news coverage and in-game graphics allowed gamers to collectively reflect on the current status of technological infrastructure and broader societal concerns. In these moments of heterogeneous entanglements of the social, political and technological space the meaning of the game as an entertainment tool transformed into a tool for public opinion expression and reflection.

Longwei's and Chao's comments about the change of WoW's graphics, for example, illustrate how engagement with the game design provided opportunity to reflect upon the government's construal of traditional concepts such as harmony and societal balance as reasoning for media control. In these moments where players brought game graphics and infrastructure to the fore and engaged with the technology in seamless ways, the game constituted a vehicle for political discourse. Here, game design and technological infrastructures were not only brought to the fore in order to learn about technological functionalities, breakdowns and limitations, but also to make sense of political maneuvers that impinged on the game space.

From a player's point of view, the choice for seamless or smooth interweaving, then, often depended on the particular atmosphere in the café, on activities in the game, or on a hybrid of both. For example, it was crucial for collective learning in the *wang ba* to bring technological infrastructures to the fore, while this was not always necessary for daily routines of game play. While at times players made use of the game as an entertainment space to spend leisure time with coworkers to explore the myths of Western game graphics, at other times the media became a referent in political discourse or was used to express trust in others.

Enabling Ecologies

CSCW research often focuses on analyzing and supporting coordination. Crabtree and Rodden, for example, suggested that fragmented interaction and collaborative articulation work, which support coordination, form hybrid ecologies of physical-digital environments [14]. However, a framework focused on coordination alone does not explain how people creatively and collectively assemble resources to meet their own goals [9] in a particular hybrid and cultural environment, or how they encounter the value systems and

sociopolitical realities that are part of our engagement with technology.

In a work setting or in a bounded hybrid reality space such as the urban computing game described by Crabtree and Rodden (with an intrinsic goal and time bounded interaction and cooperation), articulation and coordination work around shared objects and their meanings can be seen at the center of the collaborative activity [14, 30]. However, in the messy system of social, technical, socio-political, and socio-economic practices in and around WoW in China, the collaboration did not evolve around a pre-given set of technologies and artifacts or a merge thereof. Rather the hybrid cultural ecology was continuously emerging, shaping play practices and being shaped by its engaged participants.

The socio-technical ecology and the cultural meaning making of gaming we observed in China was expressed not merely in coordination, but in the social and physical stimulation of the *wang ba*, in players' assemblies of devices and software, in cross-cultural encounters with a different cultural tradition, in reflections on political ideology and action. Once we open up analysis to a notion such as *ecology*, we cannot limit analytical scope to a single technology or set of issues such as coordination. Our experience upon applying Crabtree and Rodden's concept was that it accounted for a good deal more than coordination. We found that the *wang ba* was an environment in which peer-based learning about a virtual game flourished, in which friends enjoyed meeting and playing the game with others online, in which relationships made in China's public entertainment spaces entered the virtual game space (and vice-versa), in which people transitioned between the virtual and the physical in the many ways we have described.

If we move the notion of ecology to sociopolitical concerns, as did [20], we find even more richness. The encounter with other cultures, with serious matters of political control, experienced through a game, but mediated by face-to-face conversations in the *wang ba*, illustrates the many ways the game and its technological and cultural infrastructures were entangled with a particular political and socio-economic situation of a larger cultural and societal context.

Bijker pointed out that the challenge of future design for and understanding of complex socio-technical systems is to find ways to avoid being frightened of the complexity and to develop our own idiom in which the concerns of computer-mediated social practices can be articulated [6]. It is here that we have found Crabtree and Rodden's concept of hybridity and Chalmers and Galani's analysis of heterogeneity so useful as they have provided just such conceptual frameworks. Their strategy for plowing into the complexity is to start with the physical-digital hybrid, and frictions between use and design, system and local context. We found that effective in locating the *wang ba* as a key site in which we could examine a hybrid cultural ecology of

gaming. In our analysis, we expanded these concepts to account for the complex entanglements between governmental regulation and entertainment infrastructures and between virtual capital, such as virtual avatars and virtual currency, and expression of trust.

Thus, in this paper, we moved beyond understanding hybrid practices as something new and arising from emerging ubiquitous and mobile technologies [22]. Online gaming in China provided a rich example of socio-technical practices that shape existing hybrids in the messy settings of everyday life. In China's *wang ba*, student dormitories, and malls, we have been immersed in a culture in which people playfully and creatively appropriate hybrid resources, carry out social and technical activities in creative ways, foster relations of mutual help, and look beyond the boundaries of the game itself to the wider world which players themselves partially shape.

CONCLUSION

With the increasing ubiquity of computational systems in our homes, at work, on our streets, in our malls and in our public transportations systems, a hybrid of digital and physical environments is always given. However, the particular shapes it takes on, the various experiences it affords, and the ways it regulates and the ways it is appropriated differs across particular localities and contexts. In this paper, we provided an account of the particular shapes a culture of gaming in China took in and around the China's *wang ba*. In doing so, we explore how digital-physical hybrids can be deeply intertwined with socio-economic decisions, expressions of trust and friendship, and in-game dynamics entangled with a regulatory political system.

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