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Riding in cars with strangers: A cross-cultural comparison of privacy and safety in *Ingress*

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The use of GPS in gaming platforms has increasingly emerged as games and mobile devices become common bedfellows. The Android augmented reality game (ARG) *Ingress* uses GPS functionality to create ‘real-world interaction’. Released by Google in November 2012, the game has been downloaded over one million times, with players or ‘agents’ in over 100 countries (Robinson 2013). Billed with the slogan, ‘The world around you is not what it seems’, *Ingress*, ‘transforms the real world into the landscape for a global game of mystery, intrigue, and competition’ (*Ingress* 2013). Players work as members of factions, The Enlightened or The Resistance, and compete to digitally control ‘portals’ – user-submitted and typically famous landmarks, buildings or artwork, that are physically located in the world. Game success is achieved when players work together to create large fields (groups of three portals that are linked together).

Players may share a Google Plus profile for ‘verification’ purposes, meet a local teammate to drop gear or ride in cars with relative strangers to launch

attacks, 'farm', or build large fields. Thus, the duties performed by *Ingress* players in the name of teamwork seem to require high levels of trust in teammates, often in the face of privacy loss or even potential physical danger. The purpose of this research is to investigate how *Ingress* players across cultures navigate security and privacy issues as they play the game. To that end, we draw on data collected from interviews of American and Chinese *Ingress* players to address these issues.

Literature review

Owing to the relatively recent emergence of mobile GPS-based ARGs, much of the previous research is found in mixed-reality games (MRGs) and pervasive games literature. While these terms were often used synonymously, the latter emphasizes 'the pervasive and ubiquitous nature of these games: Pervasive games are no longer confined to the virtual domain of the computer, but integrate the physical and social aspects of the real world' (Magerkurth et al. 2005, 2). Montola (2005) describes pervasive games as those that break traditional game boundaries spatially, temporally and socially because the games may occur anywhere, do not necessarily have a defined stop or start time and may involve non-players of the game. Comparatively, 'Mixed reality is the merging of real and virtual worlds to produce a new environment' (Rashid et al. 2006, 1).

Pervasive games have been studied from multiple perspectives, examining the role of non-players in the game (Montola and Waern 2006) and aspects of game design (see Montola, Stenros and Waern 2009). Because pervasive games use the 'real world' as the game board, one study investigated whether and how non-players' privacy is affected as a result of players' movements and actions within games (Niemi, Sawano and Waern 2005). But the extent to which players' privacy is affected has primarily been approached as a methodological concern of researchers designing studies to evaluate gamers (Stenros, Waern and Montola 2012) or as a function of game design (see, for example, Linehan et al. 2010). The extent to which players' own privacy is negotiated as a result of either gameplay itself or as players move beyond the game boundaries and create their own methods for game surveillance and intelligence gathering remains unstudied.

Ingress: The ARG

The purpose of this research is to examine how players navigate privacy and safety concerns in *Ingress* on a local level, across cultures. The following explanation of *Ingress* will focus only on those elements of the game that are crucial in understanding the main themes addressed in this chapter.

Factions. In *Ingress*, players work as agents of either the Enlightened or the Resistance. *Ingress* agents strive to collect AP (action points) that allow players to level-up. At the time of writing, the highest level a player could reach was Level 8 (L8).

Portals. In *Ingress*, factions compete to control portals. Portals' locations are situated in the real world and players must physically navigate to portals to play the game. Players hack portals to obtain gear, such as bombs (XMPs) and resonators. Each portal contains slots for eight resonators, which are used to claim a portal for the team. Resonators have levels that influence the corresponding level of the portal. Resonators (and items in the game) range from Level 1 to Level 8. The higher the portal level, the more difficult it is for the other team to neutralize and the better gear it returns when it is hacked.

Links. Once a faction controls a portal, it can be linked to other portals of the same faction. When three portals are linked together in a triangle, a field is created. Fields are the most important aspect of the game when it comes to how the game is scored. Called 'Mind Units' (MUs), the population areas under fields are tallied and used to create the game's score at any given moment in time.

The Scanner. The game interface – the scanner – displays the game-world and the player's position in it (see Figure 10.1). The blue orientation arrow

FIGURE 10.1 *The Ingress Scanner.*

FIGURE 10.2 Intel map screenshot of All Comm.

indicates the player’s exact position in the game. The yellow circle around the arrow is 40 metres in diameter. To influence objects in the game, a player must be within 40 metres of the object. The scanner also allows for two types of chat, called Comms: Faction Comm, which is only seen by members of one’s faction, and All Comm, which is broadcast to members of both factions. Whenever a player manipulates an object in the game, the action is broadcast to All Comm (see Figure 10.2).

Farming. The acquisition of gear is one of the biggest challenges in the game. Importantly, the portals must be of a significant level to drop valuable gear when hacked. To maximize efficiency in this endeavour, players typically try to locate areas that are conducive to farms. Viable farming locations consist of a large number of portals that are close together (Figure 10.3). Much like a river draws animals to the same place for water, farms draw players of both factions to the same place and virtually guarantee that players will eventually encounter one other.

Method

Procedure

In April 2014, using the #Ingress hashtag on Google Plus, *Ingress* players were invited to participate in a survey to answer questions about how they play the game ($N = 1854$). At the conclusion of the survey, participants were asked to enter their email address if they were interested in partaking in a follow-up interview. The interviews were meant to gain a deeper insight into the privacy and safety considerations players make. Therefore, we

FIGURE 10.3 *Typical farming layout.*

selected interview participants based on a type of purposive sampling known as criterion sampling (Patton 2002). Criteria for selection included length of time playing the game, faction, gender and location. Our aim in selecting participants was to reflect both factions equally, and to include male and female players from urban areas in the United States and China. We selected players who had reached a minimum of Level 7 and had been playing for at least six months to ensure that players had experienced a range of encounters both in terms of time playing the game and in the effort to achieve success, reflected in levelling. From these criteria, twelve people participated in an interview session (see Table 10.1 for descriptives for each interview participant). We interviewed six Chinese players (two Enlightened; four Resistance) and six American players (three Enlightened; three Resistance). Interviews were conducted online using Google Hangouts. The first author and second author conducted semi-structured recorded interviews, lasting 30 to 60 minutes, with all participants during April and May 2014.

Following transcription, the authors conducted textual analysis whereby individual participants' data were used to refine themes as they emerged (Lincoln and Guba 1985). To protect players' identities, pseudonyms were created and faction membership was deleted. American players were given names that begin with the letter 'A' and Chinese players were given names that begin with the letter 'C'.

Table 10.1 Survey participants descriptive

Name*	Gender	Age	Race	Level	Duration**
Angela	Female	34	White	8	1 year
Andy	Male	35	White	8	1 year
Aaron	Male	32	White	8	1 year
Anna	Female	32	White	8	1 year
Adam	Male	35	White	7	7 months
Abby	Female	27	White	7	7 months
Curt	Male	24	Asian	8	1 year
Carlson	Male	24	Asian	8	1 year
Carrie	Female	40	Asian	8	1 year
Charlie	Male	25	Asian	8	1 year
Craig	Male	41	Asian	8	1 year
Chris	Male	28	White	8	1 year

Findings

Teammates: Let me blow that up for you

From fielding to farming, players continually encounter situations that require teammates. Aaron explained: ‘To make a Level 8 portal, you need 8 players with you. You don’t all have to be there at the same time, but realistically, it’s not going to happen unless you coordinate with the other players.’ As players recognized the need for coordination, Google Communities, and now Google Plus groups, were created to discuss plans without fear of spies reading the in-game Faction Comm. Andy explained that creating a Google Community for his local team was one of the first things he did as a new player because: ‘There was lots of talk to see what we could do, testing things out, telling each other, “Oh I just made a field,” or these are my plans for this field, you know? And, just to have a name, have a person match up with that name.’ The usage of Google Groups and Hangouts has become ubiquitous among players of higher levels. A by-product of using these communities, as Andy

points out, is that players often learn each other's real names and identities in these online spaces.

Teammates seemed to naturally progress from online meet-ups to in-person encounters. Each player described a nuanced process of decision-making that involved using both the cues given off by the technology (i.e. the way players interact with others or whether they belong to the Google Plus community) as well as physical markers (i.e. location) to determine whether the situation seemed safe. For example, Andy continued: 'Within two weeks of playing the game we ended up wanting to meet [in person] because we seemed to jive online and this is a local kind of thing, and we just decided to meet to make it easier than typing.' Andy expressed relying on the online chat to first get a feel for his teammates and their personalities before ultimately inviting them over to his house for a team meeting.

All of the players described first meeting up with other people when they were very new to the game. Typically an experienced player reaches out to a new player on Faction Comm and offers assistance. Because lower level players' bombs do not do much damage, they often require the help of higher level players to destroy higher level portals. This was true for Carlson who described meeting a teammate in a location that made him feel comfortable:

He came to help me level up. He taught me how to play, shared items with me and helped me destroy enemy portals because at that time I was really low level and could barely do anything. I felt safe because he came to my campus. In China, the college campus is a safe place and there are friends and classmates all around.

Comparatively, as a seasoned player and local leader, Aaron is the type to be the person on Comm reaching out to newer players. He uses the notifications on the scanner to recognize when another player is near and uses his own personal assessment of individuals to determine whether meeting is a good decision. He explained:

If I saw a person on Comm in my area, I would reach out and say, 'Hey you wanna say hi?' . . . I'm not very bashful about it. I just think it's more fun to meet other players. I can't think of an instance where I didn't reach out or say hello in some way. I'm confident in my ability to quickly assess another person and decide if I need to leave the scene [laughs].

Curt takes a broader approach to his vetting, explaining: 'the number of players in China is pretty small . . . In China, the high entry of the game pre-decides

who the players will be and players should have common interests in many ways.' Essentially, he uses the fact that another person is capable of playing the game as his primary vetting process.

Perhaps because of all the communication and the likelihood of meeting teammates, all of the players used the word 'community' to describe their local faction. And for many players it is the sense of community that appears to drive their passion for the game. When asked why she plays, Angela said the primary reason is: 'The social part of it, the meeting up with other people, and having fun with other people.' Once accustomed to the practice of meeting players, most of the players we interviewed described enjoying this aspect of the game.

Privacy: The art of spy craft

Although teammates often choose and plan to meet each other in person, many meetings in *Ingress* happen without the outright consent of the players involved, but rather as a result of players being in the same place at the same time. With the scanner continually broadcasting players' locations and the range players must be within to affect portals, the physical component of the game lends itself to chance encounters with other players as well as the opportunity for spy craft. Aaron described the first time he met another player:

I saw a portal that belonged to the other team. I was going to smash it but it was dying and being recaptured as I was approaching it. So, I realized there was another player there. Um, yeah, it took me about half a second to realize who it was because it was the middle of the night and it was in front of a closed business.

In the situation above, Aaron met a teammate. However, players often observe or encounter opposing members. These situations frequently lead to what players describe as spy craft. Andy found the notion of spy craft to resonate immediately upon playing the game. When he created his Google Plus circles, 'for teammates I put them in a circle called "fellow spies". Because, to me that was how the game played out, like a spy game. Like, spy versus spy.' The spy craft aspect is something that players developed outside of the game itself. However, the mechanics of the game make it easy for players to engage in surveillance against opponents and the tactics that players have developed in the effort to create 'intel' on opposing team members may lead to privacy issues.

Sometimes, players may inadvertently find themselves engaging in spy craft behaviours. Take for example Anna's story:

One time, I completely accidentally ended up finding a player on the other team. I have a portal by my house and as I was pulling up, I could see someone just happened to be hitting my portal. So I looked around and I was like [whispers] 'He's right there!' So I followed him for a couple blocks and after a few portals I was able to confirm, 'It is him!' And I was like 'Ohhhhhhhhh!' But then I didn't want to follow him too far because I was like, 'Oh, that's weird.'

Anna decided to follow the player more as a result of her curiosity than for any purposive gaming reason. In many cases though, particularly when opposing players are thought to be cheating, players will make efforts to gain information through surveillance. Angela explained:

There's been situations where we thought particular people were cheating. . . I was like well, you see [on the scanner] where they're playing now. So someone drive over there and look in the car and see if there's another person in there with them. But I would never, I don't encourage anybody to keep track of anybody or anything like that.

In other cases, amassing 'intel' on opponents was thought to be helpful in overall gameplay. Knowing where an opponent works or what time an opponent leaves work, for example, helps when planning defensive strategies. Andy described a situation where his team was actively recording information about the opposing teams:

Well, in the early days, we probably did some . . . things that maybe went too far. We had dossiers on the other team. It started as a Gplus page with descriptions of people's cars . . . then it was people's cars and their license plates. We never tried to get or post photos of the other team because that's a little creepy. We stopped doing the dossiers awhile ago though.

In the above scenarios, despite some measures to learn about opposing teammates, all the players described an imaginary line over which they would not cross. This suggests that players are aware of potential privacy violations they may be committing, but to some degree are okay with the steps they have taken to gather information about opposing players.

Even if players did not talk about actively collecting others' information, they seemed aware that they themselves were potentially being monitored, with some taking extreme measures to protect their own privacy. Craig explained: 'I'm very sensitive to detailed personal information, for example, my real name, contact information, and house number, I try my best to

protect. I have the highest AP in the city, but I don't even meet up to play with my own team.'

For most participants though there seemed to be an acknowledgement that by virtue of playing the game, there is an accompanying privacy trade-off, especially in regards to the player tracking that the game provides through the scanner. Curt succinctly explained: 'I think it's the foundation of the game – you choose to play and you agree to be broadcasting your locations. So playing the game is to reveal your location by default.'

Safety concerns

The tagline for *Ingress* is 'The world around you is not what it seems' and the game actively encourages players to get out in their communities. Charlie described: 'Ingress is all about being offline, and people have to move out of their house to play. This is exactly what I like about the game. I want to explore every corner of my city.' This exploration can be exciting, but it also requires players to use their own judgement when it comes to venturing into areas that may be deemed high crime, off-limits, during bad weather, alone or while playing the game late at night. All of the players voiced awareness about their surroundings, but most felt capable of making good judgment calls despite most having an example in which they displayed potentially risky behaviour.

One night, for example, Anna found herself in a secluded area and ran into a member of the opposing team:

At first it was like 'I'm in a park at nine o'clock at night, nobody around, near some train tracks, with a guy who open carries [a firearm] and is bigger than me.' It's not like I was really scared of him but, you know, the little, like, rational part of my brain was like 'Hey, this might not be a good idea.'

Angie had a similar story:

I found myself in a rougher part of the neighbourhood at 3:00 in the morning. And I got to a point where I was like, I was thinking 'This probably isn't the best area . . .' but even still I considered walking farther out, but then I stopped myself and I thought, 'Yeah this probably isn't the best idea.'

In comparison, Craig expressed feeling secure 'because I'm big and tall, I am not afraid of any physical threats'. Similarly, Adam and Abby, a couple, felt that because they most frequently played together, they faced fewer safety concerns. While gender clearly impacts a player's sense of safety, his or her respective size and whether he or she is playing alone are also important.

Interestingly, several participants mentioned the continual broadcasting of their location as a feature that, while detracting from privacy, actually added to their sense of security. For example Charlie felt:

I am very comfortable and safe about announcing my location. Why? Because people can see me performing on the intel [map] all the time. Or, if anything bad happens, I think my team or my friends in the game will know the last portal I was at.

Charlie's point reminds us that safety concerns in the game aren't limited to encounters with members of the other team. Players must also contend with 'civilians' or non-players. For many participants, this amounts to a run-in with security as a result of trying to access a limited area or because of displaying behaviour that appears 'suspicious' to law enforcement. Most players find that simply being truthful with law enforcement yields the best results. Curt described one situation with security guards: 'They would see a group of us and would question us about what we were doing there. We had to explain we were playing a phone game.'

Although most participants could not recall any instances where they felt unsafe as a result of going to an environment to play the game, Curt described an encounter which made him feel frightened:

It was the first time I played the game alone in a particular area. I met a very creepy older guy. He came to me and whispered . . . Later he was trying to touch me (my lower body). I was scared to death and I yelled at him, 'What are you doing?' and I ran away.

Another consideration for players is that they are carrying devices which typically cost hundreds of dollars. This was not lost on Chris, but he felt 'no concerns about my safety at all. Beijing is 1000 times safer than the U.S. I can walk with my phone in Beijing but I have to put my phone in my pocket if I'm in the States.' Despite Chris's feelings on the matter, none of the American players expressed any concern about using their mobile devices.

Discussion

Ingress agents face a number of privacy and safety considerations as a result of playing the game. Many of these considerations stem from the nature of pervasive games, generally, as described by Montola (2005) in that *Ingress* breaks traditional game boundaries: spatially, by occurring in the physical world; temporally, by having no clear start or end; and socially, by involving

non-players as well as players. Although at first glance it may appear that players wistfully meet up with relative strangers, they actually described nuanced and strategic thinking in terms of assessing situations. Players relied on the technology provided by the game to observe how other players interacted and the locations and times others played to make inferences about whether the individual was someone with whom they would meet. Additionally, and in keeping with previous research on MRGs (Kim et al. 2009), *Ingress* players rely on communities that are based in social networks, specifically Google Plus, to learn about teammates and subsequently to use that information to influence their decisions about whether to meet in person.

Although previous research in pervasive games has investigated how non-players' privacy is affected (Montola and Waern 2006) and how game design can affect privacy, (Montola, Stenros and Waern. 2009) or influence storytelling (De Souza e Silva and Hjorth 2009), the current study highlights how players may take it upon themselves to engage in behaviours that fall outside the game boundaries and that potentially infringe on privacy. Participant Andy explained: 'There was no "way" to play when we first started.' So why players decided to incorporate these tactics offers an interesting question for future studies. While the American participants provided more examples of the types of spying and surveillance techniques they employ or had employed, the Chinese participants reflected knowledge of these techniques in that they discussed being on the receiving end of them. It would seem, then, that regardless of culture, *Ingress* players are aware of some types of potentially privacy infringing behaviours, whether they engage in them or not. Perhaps most importantly, however, was the apparent agreement across players that certain privacy aspects must be forfeit if the game is to be played. In other words, eventually an *Ingress* player will run into another player, for example, and there are necessarily privacy issues that go along with such disclosures. Despite this feature, most players positively embraced the notion of meeting others as a result of playing the game. Thus, it is important to keep in mind that not all privacy exchanges are bad, per se, particularly given that all of the players interviewed felt that they had far more positive experiences as a result of playing the game than negative.

In terms of motivations to play the game, those suggested by participants seem to confirm the factors found by Yee (2006) in relation to MMORPG: achievement, being social and immersion. Although players described enjoying the challenges of levelling-up, they experienced immersion differently in that the game takes place within the physical world, and they found enjoyment in exploring and immersing themselves in their city. Perhaps most importantly, most players listed the social aspect as the driving force behind their motivation to continue playing.

Conclusion

This chapter discussed realities faced by players of the ARG *Ingress*. Drawing from interviews with Chinese and American players, we highlighted how players negotiate privacy and safety while playing the game. This area of research presents a number of useful findings. Primarily, both American and Chinese players expressed the same concerns in regards to privacy and all players acknowledged that exchanges of privacy do occur as a result of gameplay. Despite taking measures to protect their own privacy, many players described engaging in tactics to gather information about opposing players or accidentally learning personal information about other players. Additionally, a potential difference among genders emerged when personal safety was discussed and those who played alone described more safety considerations than those who played in groups. Regardless, most participants expressed feeling enjoyment that occurs from meeting other players through gameplay. The overlap of gameplay and offline engagement is increasingly relevant to socialization in the networked society. And while *Ingress* is an ARG, this research shows that nature of this game is inherently 'social'.

Because this chapter offers an initial overview of the privacy and safety challenges encountered by *Ingress* players, there are many aspects upon which it does not touch. Whether these games are suitable for children, for example, will depend on how norms and restrictions influence the safety of players in the game environment. Since its original release, the age requirement for *Ingress* dropped from 18+ to 13+. Whether and how this change influences gameplay will be an important development to follow. Additionally, the effects of gender on in-game decisions and overall success are an area ripe for study. Lastly, researchers should examine how the data generated by players is used by the companies that provide the games. *Ingress* is a free game, but players exchange large volumes of valuable information in order to play.

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