INGRESS WELL-PLAYED: CITY AS MMO

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Abstract

This paper describes player experience for *Ingress*, a geo-local, mobile augmented reality game created by Google's Niantic Labs. *Ingress* incorporates aspects of both pervasive, alternate reality (ARG) and massively multiplayer online (MMO) games. However, unlike many ARGs, *Ingress* is not focused on a specific time-limited period, or linked to a single real-world event or location. And unlike a typical MMO, play in *Ingress* is geo-spatially limited; players must be physically proximate to game elements in order to interact with them. Using game mechanics similar to those of many MMOs, *Ingress* provides for a range of gameplay, based both on user play preferences and level of experience and achievement. with a focus on the importance of social, community, and collaborative aspects of the game. Participants in this session are encouraged to install the *Ingress* application on their iOS or Android phone so that they can participate in a live gameplay session.

Introduction

It is difficult to assign *Ingress* to a specific genre, since it incorporates aspects of alternate reality games (ARGs), massively multiplayer role playing games (RPGs), mobile augmented reality games, and pervasive games. Developed by Niantic Labs, a team

within Google, *Ingress* was released as a closed invitation-only beta on the Android platform in November of 2012. After a full year in beta, *Ingress* was made publicly available on Android in November of 2013, and an iOS client was released in July of 2014. While Google has not released specific player numbers, in May of 2013 there were estimates of approxiately 500,000 players (Schmidt, 2014), and by September of 2014 a *VentureBeat* article estimated the number of players worldwide at approximately seven million (Takahashi, 2014). As of the writing of this article, the Google Play store shows over five million downloads for the game software, which does not include downloads by iOS users via iTunes. It is unlikely that all downloads of the game have resulted in long-term active players, but it is definitely the case that the game is actively played in communities across the globe, from large cities to tiny villages.

For most players, the first introduction to the game comes from the website at *Ingress*.com, which contains only links to download the mobile client, and a video that provides a teaser for the ARG narrative behind the game. The video describes the presence of "portals," located primarily at artistic and cultural sites, which emit a new form of energy called "exotic matter" (XM). Only with a "scanner device" (a smartphone running the *Ingress* software), can humans see the presence of these portals. Minimal information is provided to potential players beyond this broad-strokes backstory, and while a link to a tutorial video is buried at the end of the initial video introduction, the relatively small number of views on that video (~320K at the end of February 2015) would indicate that it is not a primary source of information for many players. The design of the main *Ingress* site, which has no links to other resources, makes it clear that the next expected step is to download the client software.

The New Player Experience

Upon launching the *Ingress* client software, the player is asked to log in using their Google acccount; no other login options

are allowed. The terms of service for *Ingress* very clearly limit users to a single account, which must be linked to their Google account. To get full access to inventory space in the software, users must also verify their accounts via email, but basic play is enabled as soon as the user enters their Google credentials.

Once a new player has logged in, they are presented with a series of introductory screens that provide a simple introduction to the underlying game concept, and then require the player to select one of two factions in the game (see Figure 1). The faction descriptions provided are minimal, but players nonetheless must select one knowing that their choice is, as the interface tells them, "final." In fact, it is possible to change factions after beginning the game, although players are limited to a single faction change, the process takes several weeks, and players switching factions are returned to level 1 status, losing all activity points gained. ("How do I change my faction or my codename?," n.d.)

Figure 1: New Player Faction Choice Screens

My faction choice in *Ingress*, as in most MMOs I have played, was based on my desire to play with a friend (a member of the Enlightened faction), rather than on an assessment of the ideological descriptions provided. An informal survey of *Ingress* players done in early 2013 seems to indicate that I was in the minority in that decision, but it is also possible that as the

number of *Ingress* players has increased over the past two years, the influence of existing social ties on faction choice has grown.

> Half of players chose a team based on the in-game storyline, and the other half deferred to other more practical determining factors. There seems to be a Nash equilibrium of sorts here, which keeps the two teams on an equal footing (in numerical terms anyway). The 23% of people who purposely chose to join the losing team (locally or globally) have a highly balancing effect. The 15% who chose at random would also contribute to equilibrium. Only the 14% who joined the same side as friends have a destabilizing effect. (Lui, 2013)

The two factions are functionally identical, and the game focuses on a struggle between the two. Players are encouraged to claim locations in the game and defend those locations from attacks and reclamation attempts by players on the opposing faction.

New players receive a brief tutorial in the use of the game software (referred to as a "scanner," since it scans the local area for portals and XM) (see Figure 2). The tutorial is displayed on top of the live scanner interface, which shows a very simple map of local roads, with the player represented by a triangle on the map, surrounded by a circle representing a 40m radius around the player's location.

Figure 2: Initial Player Tutorial

Players can only interact with items that are within the marked

circle on the map, including portals, XM, and items that may have been dropped by other players. The initial tutorial walks a player through the process of approaching the nearest portal, tapping it to interact with it, and then "hacking" the portal to receive game supplies. This first hack supplies the user with several resonators (which are used to power up a portal) and XMPs (weapons used to destroy portals controlled by the opposing faction). At that point, the mandatory tutorial is complete, and the user is dropped into the live game world.

There are additional tutorials built into the program, but they are not immediately obvious to a new player; they require the player to access the "OPS" screen, and then scroll the menu until "Training" is revealed. The tutorials walk the player through a series of common game actions, including:

- Collecting XM: This is the energy necessary for all other game actions. XM can be collected by walking near portals or through densely populated areas.
- Neutralizing an enemy portal: Using XMP weapons to destroy resonators on an enemy-controlled portal.
- Capturing a neutralized portal: Placing resonators into slots on an unclaimed portal. Placing one resonator gives you credit for "capturing" the portal, but to fully activate the portal's play capability, each of its eight slots must be filled with a resonator from your inventory.
- Creating a link between two portals: Hacking a portal will frequently yield a key to that portal. You can link from a portal in range to other portals for which you have the key.
- Creating a control field: Linking three portals into a closed triangle creates an XM control field, and the space within the field is shaded in with the color of your faction. Creating a field results in your faction receiving points for "mind units" (MU) contained within the field, based roughtly on the

population density of the geographic area the field covers (see Figure 3).

Figure 3: Control Field Tutorial

There are a number of restrictions on linking that are not immediately obvious to a new player, and that are not discussed in the tutorials; these include the fact that creating a link to a portal consumes the key to that portal, requiring you to hack and collect another key in order to create additional links, the inability for links between portals to intersect at any point, and the inability to link from a portal that is already inside of a control field. These restrictions on creating links tend to generate the most common questions from new players. ("Why can't I link to this portal?" is a frequent refrain.)

The primary Ingress.com website offers nothing in the way of links to documentation, which leaves users to fend for themselves in terms of learning anything beyond the basic mechanics. However, an informal survey of high-level players in my local metropolitan community, found that very few had viewed official video or written tutorials, and instead had relied primarily on more experienced players to help them learn how to play. This was echoed by players responding to a query in the /r/Ingress subreddit, many of whom said they learned basic play from searching online for resources, but that most of their learning came from peer mentoring in their community.[1]

Ingress Communities

While I was aware of the launch of the game in 2012, and its transition out of beta in 2013, I did not begin playing myself until the release of the iOS client in 2014. My first experience with *Ingress* was a frustrating one, as I found that the user interface—even in the tutorial mode—left much to be desired. I knew only one other active player at the time, who was still a relatively low-level player, and while he was able to show me the basics of capturing and linking portals, neither of us had a good sense of the game as a whole, particularly in terms of strategy. As in many MMOs, early play is primarily solo, but as you begin to level up in the game, interaction with other players is both inevitable and necessary. Unlike most MMOs, however, *Ingress* play is geographically bounded, and as a result, communities of players are generally based on location.

Each time a player captures a portal, or creates a control field, that action is reported in the COMMs section of the game software, and is visible to players within the local area. This allows local players to see when a new player becomes active in a region, and to reach out to that player with information about local community activity.

As players in a moderately large city, we were quickly contacted by other players in our faction via the in-game communication channel, and invited to join a G+ community and Google hangout for local Enlightened players. In our metropolitan area, the Enlightened community maintains a G+ site, but it is used primarily for announcements. There are also two G+ hangouts for Enlightened players, which is where most communication takes place. One is open to all players, but is

1. An online search in February 2015 for "Ingress tutorials" yielded a growing number of tutorial sites, including an official "Help Center" set of tutorials (https://support.google.com/Ingress/), an unofficial set of graphic tutorials that are widely linked to by local groups (https://plus.google.com/u/0/photos/+AlexaMayer/albums/6069486745282199137), a very active subreddit, (http://reddit.com/r/Ingress), and a popular website called DeCode Ingress (http://decodeIngress.me).

focused on welcoming and mentoring new players while they work their way up to level 8. The other is only for players at level 8 and above. The level 8 distinction is important, because after level 8, progression is based on the acquisition of badges rather than simply activity points (AP). The separate hangout for new players also provides a bit of a proving ground, to help reduce the risk of adding players who might accidentally or intentionally reveal information about planned operations to members of the opposing faction. Both hangouts include a significant amount of "off topic" chatter, which ranges from humor to technical support to personal updates. This organization of the social tools is specific to our community and our faction, however, and each regional area varies in the way that it engages new members and structures ongoing participation. There is also speculation among *Ingress* players that the lack of a strong communication infrastructure within the game is intended to encourage more use of Google's G+ and Hangout tools.

The role of MMOs as "third places" for both socializing and learning has been explored by a number of researchers (Nicolas Ducheneaut, Moore, & Nickell, 2004; Moore, Hankinson Gathman, & Ducheneaut, 2009; Steinkuehler & Williams, 2006). *Ingress* implements this in an interesting pervasive way, with players meeting and socializing in real-world contexts as well as through online community tools. Additionally, these local *Ingress* communities share a number of similarities with MMO guilds, many of which have strong outside-of-game presences (N. Ducheneaut, Yee, Nickell, & Moore, 2007; Rossi, 2008; Williams et al., 2006). Because *Ingress* is a pervasive game rather than a virtual online world, however, the lines between game and real-world activity are much less distinct.

> Pervasive games consciously exploit the ambiguity of expanding beyond the basic boundaries of the contractual magic circle. This often leads to the point where the game interface is completely ambiguous: Any action could be a game action, and any sensory

> observation by any participant could be seen as part of the game. (Montola, 2005)

This is where *Ingress* diverges from most clearly from virtual world MMO guilds and social spaces—everything from weather forecasts to commuting challenges to vacation plans has a direct impact on gameplay, and is likely to be discussed in the game communities. Traffic jams, for instance, offer opportunities for drivers to hack portals on their route, weather can facilitate or prevent access to portals in remote locations, and vacations offer an opportunity to visit (and hack, and capture) portals in new locations.

Game Objectives

The designers of *Ingress* have implemented a number of explicit individual objectives in the game mechanics and elements. For beginning players (up to level 8), the primary emphasis is on accruing activity points (AP). This can be done through hacking enemy portals, capturing and populating portals, and linking and fielding between portals. Once a player reaches level 8, AP is still required for leveling, but it is also necessary for the player to acquire badges, which involve reaching specific numeric goals related to game activities. These include the Explorer and Pioneer badges, obtained by visiting and capturing many different portals, the Purifier badge for destruction of enemy portals, the Builder and Engineer badges for creating and modifying portals, and the Trekker badge which rewards distance walked while playing the game ("Badges," n.d.).

The goal of increasing players' physical activity underlies much of the game design. The tag line on the initial login screen for the mobile app says "It's time to move," and that line appears frequently in official communications to players from Niantic Labs. Players also learn, either from their communities or through trial-and-error, that moving between portals at a speed above ~50 km/hour causes the software to "speed lock,"

preventing player action—a strong incentive to play *Ingress* on foot rather than from a moving vehicle.

Another implicit objective of the game is to familiarize players with local sites of historical or cultural significance; new portal submission requirements ("Candidate Portal criteria," n.d.) specify that a location must meet one of the following criteria:

- a location with a cool story, a place in history, or educational valeu
- a cool piece of art or unique architecture
- a hidden gem or hyper-local spot
- a community gathering place
- a point of interest that facilitates discovery/exercise

Ingress players often report becoming more aware of historical and cultural information about their local city or region through their gameplay, as well as finding that they develop a better sense of geography and navigation. However, most *Ingress* gameplay encourages players to focus on their scanner rather than the world around them, and *Ingress* players are thus more often gazing at their phones than at the artwork or architecture in front of them. This is something that could potentially be addressed through gameplay mechanics; some efforts on this front are noticeable in the new player-created missions built into the game, which allow mission creators to prompt players to take photographs or answer questions about the portals they encounter ("Create Ingress Missions: the basics," n.d.).

As players level up, the need to work collaboratively becomes more apparent. Higher-level gear becomes available to players at each level up to 8, and can only be obtained by hacking portals at those higher levels. However, there are limits on the number of high-level resonators that a player can place on a single portal. A level 8+ player can place only a single level 8 and/or level 7 resonator on a portal (as well as two level 6, two level 5, and

four level 4). Portal levels are calculated by taking the sum of the values of all resonators, dividing by 8, and rounding down. This means that a level 8 player cannot create a portal higher than level 5, and that creating a level 8 portal requires eight level 8 players to each visit the portal and place a resonator on it. To gather supplies of high-level weapons and resonators, therefore, it is necessary for level 8+ players to coordinate on the capture and populating of portals, often working together to create "farms" of level 8 portals for harvesting of resources. Since there is strong incentive for the opposing faction to destroy those portals, these farms are often short-lived, and thus require collaborative planning to maximize yield.

Understanding this part of the game typically requires either guidance from more experienced players or fairly extensive online research, as it is far from self-explanatory. The first two screens in Figure 4 show the global and regional (cell) MU scores, respectively. Globally, players have estimated that there 24,576 cells, which on average are approximately 21,000 square km in size. The scores are calculated over a 150-hour cycle (a "septicycle"), broken down into five-hour checkpoints. The third screen shows a leaderboard of individual player MU scores within a cell. Only MU currently contained within a faction's control fields at the five-hour checkpoint are included in the regional and global score. Individual player scores on the leaderboard, however, represent all MU captured during that cycle. For many experienced players, timing the creation of fields to coincide with checkpoints, as well as jockeying for position on the leaderboard, become an important aspect of the game. ("Regional Mind Unit Scoring," n.d.)

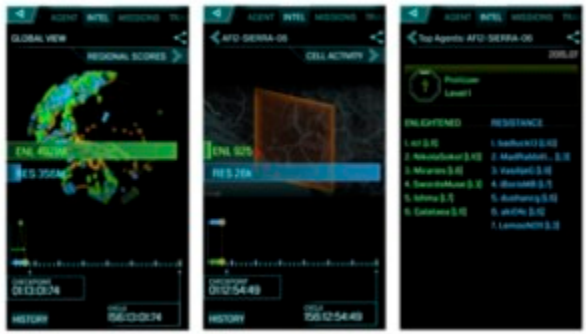

Figure 4: Global and Regional MU Scores

The very uneven global scores shown in the first screen of Figure 4 reflect the results of a large, multi-layered field over much of the Indian subcontinent that was created by Enlightened agents on 28 February 2015 (kheaz, 2015). These large fields are extremely challenging to implement, because the links between portals cannot cross any other links. The operations behind the creation of these fields bear many resemblances to MMO raids, with pre-planning by players before the implementation of the field (to determine optimum anchors for the corners or anchors of the field and recruit players to travel to those locations at the set time), and ongoing real-time communication before and during the actual field creation, because players must remove any blocking links along any side of the planned field before it can be completed.

Unintended Consequences

In addition to the actual gameplay, *Ingress* has had some interesting unintended consequences, both for players and for communities. One of these is the extent to which the game leads to breaking of laws. An informal survey of *Ingress* players found that "[a]lmost one in three players have skirted around the law: 16% said they had 'knowingly broken legal or local regulations

in order to play *Ingress*' and a further 15% ominously said 'maybe'." (Lui, 2013)

It is likely that this lawbreaking involved either use of mobile phones while driving, or trespassing in order to reach portals—ranging from minor transgressions to potentially serious breaches. While the *Ingress* portal guidelines require that portals not be located on personal private property, they do allow for portals on public lands and commercial private property, and these areas often limit their access. Public parks and cemeteries, for instance, frequently house portals, and also tend to limit access to daylight hours. Portals can also be found in places that require admission fees, such as amusement parks.

In order to reach a range of portals, and particularly in order to create or defend control fields, players may end up in deserted parking lots late at night, or lurking at the edges of commercial or government buildings during off hours. This has led on more than one occasion to players being stopped and questioned, or even arrested, by local law enforcement. (A web search on "*Ingress* law enforcement" yields a number of stories about encounters between players and police.) This also raises interesting questions about how real world identity aspects such as race, class, and gender can directly and/or indirectly influence a player's access to game resources.

Conclusion and Directions for Future Inquiry

Ingress, with its unusual combination of pervasive gaming and MMO mechanics, offers a rich environment for those interested in the study of games and learning. This paper provides only a basic description of *Ingress* mechanics, gameplay, and community. There is fertile ground for deeper inquiry into the game's influence on players' physical activity levels, on their knowledge of local history, culture, and geography, and on their engagement in informal peer mentoring. It also raises interesting questions about how merging real-world spaces with gameplay results in issues related to real-world identity and access. This

paper attempts only to open the door to greater awareness of the game, and to pave the way for further and more detailed research into a variety of aspects of *Ingress* play.

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