Shapers, Portals and Exotic Matter

Living Fiction and Augmented Reality in Google's Ingress

Kai-Uwe Werbeck

Introduction: Ingress and the City of Bits

Google's successful smartphone app *Ingress* has been described as a fascinating combination of a "virtual scavenger hunt and the board game *Risk*."[1] While this is a suitable short-hand of its basic game mechanics, *Ingress* also borrows from Role-Playing Games (RPGs). Since their emergence as a mass cultural phenomenon in the 1970s, RPGs have constantly mutated, from the still influential pen-and-paper systems to LARPs (Live Action Role-Play) and a wide variety of digital iterations. With *Ingress*, the genre has again entered a new stage. It blends RPG elements with what William J. Mitchell has termed the "City of Bits," in which "the real city that surrounds us and the video city that guides us are held in perfect coincidence."[2] *Ingress* retains prominent RPG characteristics—for example, the attack system, the inventory of items, and the elaborate background story—and superimposes them onto twenty-first-century urban space.[3] Players join one of two competing factions and use their smartphones' GPS function to fight for so-called "portals," digital constructs attached to corporeal landmarks. As players have to be in physical proximity to the portals in order to affect them, the gameplay creates a contested, liminal space between the game world and the concrete affordances of the city. In a video interview with DICE, John Hanke, the app's inventor, calls the result "Living Fiction," explaining that "a local player event in London

will be designed to demonstrate how players interact with the storyline and change it, by playing in the real world and how the news gets fed back to the larger game community."[4]

After first illustrating the structural similarities (and differences) between earlier RPGs—both analog and digital—and Hanke's living fiction, I argue that by inscribing (role-playing) game-like narratives into urban space via smartphones, *Ingress* both challenges and consolidates the "postmodern" condition, in which, ostensibly, experience is always already mediated and spatiality rendered topsy-turvy.[5] At stake in this analysis of *Ingress*—and by implication the blossoming genres of living fiction and augmented reality games writ larger—is an answer to the question "how the lessons learned from narrativist RPGs […] can be brought to digital media" as well as an analysis of modes of perception and experience in highly networked and media saturated societies.[6] Drawing a line from the first tabletop role-playing games (TRPGs) to video games to online games such as *Ingress* allows me to discuss the cultural currency that role-playing still has and to illuminate how the genre is co-opted into new meaning producing systems of communication. To this end, the essay follows Gary Alan Fine who, in his seminal sociological study on RPGs, sets up a triptych of three frames: "commonsense reality, the gaming rules, and the content of the gaming fantasy itself."[7] Fine already acknowledges that the complex interactions of these frameworks change their relations to each other, a fluctuation that he calls "frame oscillations."[8] In other words, the ratio of Fine's three categories will vary in the actualization of any given gaming session: some players will focus heavily on rules and treat the RPG more like a board game, while others may eschew heavy regulation in favor of story-telling. Frame oscillation is at work in *Ingress*: the primary framework gains in importance as the superimposition of a virtual map onto physical space is critical to success in *Ingress*. The secondary framework—the structural core of the RPG defined through rules—is delegated to the app, while the tertiary framework—the layer of the game that generates the actual role-playing—undergoes substantial revisions and is externalized; story-lines in *Ingress* are mainly advanced by a group of non-player characters played by actors brought to life in videos that are disseminated via the smartphone and Internet channels such as google+.

The notion that *Ingress* shares its DNA with the RPG genre is widely accepted but remains under-utilized in research. Its entry on *Wikipedia*, for example, calls the app an "augmented reality massive multi-player online role-playing GPS dependent game."[9] In an interview, Hanke is asked if he foresees "any chance of developing player roles (much like player classes in RPGs) where one's role would adjust one's attributes and capabilities in the game (attackers, builders, linkers, farmers, etc., maybe with the possibility of growing multi-role characters)?"[10] Hanke replies "good ideas," suggesting

an awareness that *Ingress* has the potential for further developments toward RPG components.[11] Co-creator Flint Dille, a role-playing industry veteran, further mentions in an interview that "missions" in *Ingress* are similar to "quests that you might go on in a traditional RPG" but at the same time acknowledges that the game's structure necessitates changes to how these quests are planned and executed.[12] Along the lines of Dille's comment, this essay is not an attempt to force *Ingress* into a generic straitjacket; quite the contrary, the term RPG in itself is understood here as by no means fixed and monolithic. The genre has always been fluid, prioritizing certain characteristics prevalent to its current permutation and omitting others while retaining permeable and mutable boundaries throughout.[13] *Ingress* is not (yet) a full-blown RPG in the sense of performative inter-personal narratives, but it succeeds, I argue, in establishing the genre as a central part of the online-gaming community as it repeats evolutionary steps the genre has taken before. While the app's current position mirrors the early days of role-playing, in particular its relation to military strategy, as well as single-player video- and computer games, it already gestures toward the near-future amalgamation of augmented realities and RPGs.

Framing Ingress: The Genealogy of Role-Playing Games

In order to localize the shared DNA between earlier RPGs and *Ingress* and query the ramifications of role-playing elements being injected into the *City of Bits*, I will take a step back and familiarize readers with the app. Tasked with the amalgamation of map services and online games, Niantic Labs, a Google-owned start up, began developing the game in 2004 and made it available for beta-testing in 2012. Hanke and his team set up a storyline that frames the game's explicitly "technological" representation of space as depicted on the "scanner," the smartphone's display. *Ingress* proposes the existence of an alien race, the Shapers, who have released "exotic matter" to earth. The players choose a side and join either the Enlightened faction, which believes that "exotic matter," or "XM" in the game's diction, is beneficial to mankind, or the Resistance, which suspects the Shapers to have rather sinister ambitions with regard to Earth's future. In the game, the two factions are assigned color codes (blue for the Resistance and green for the Enlightened) that are applied to the game's world map, a minimalistic, black-and-grey topography that represents the physical environment as a simplified abstraction.[14] Gradually, this minimalistic "augmented" reality—presented from a slightly canted bird's eye view and zigzagged by other topographical elements that correspond to the actual surroundings—is populated with blue, green,

and grey fountains of energy that symbolize strategically important diegetic elements, in particular the highly contested portals and pools of XM. Exotic Matter replenishes the energy bar, which in turn enables the players to take action; each operation—from attacking enemy portals to fortifying one's own—costs a certain amount of energy, a system similar to video game RPGs.

Ingress grants the players a (digital) view of their immediate surroundings with the current physical location being at the center, creating an abstract yet fascinating map into which photorealistic images are inserted whenever a portal is accessed. If so desired, ominous sounds that seem to come straight out of some sci-fi movie—including crackling, robotic voices—supplement the experience. Fighting for territorial supremacy, players—represented by an arrow on the scanner—secure, connect, and defend their own faction's portals, while trying to take down those of the other faction. To this end, they fortify and link their portals using devices called "resonators" (among other items), creating powerful fields of connected landmarks that cover the map in green and blue geometries respectively. In true RPG fashion, successful actions generate Access Points (AP), which in turn slowly raise the experience level of the individual players; the higher this level, the more powerful are the items that the player can use to attack or mod a portal. Hacking portals, players harvest items that can be stored for later use. Next to weapons of varying power, collectable items—some common, others extremely rare— include so-called portal shields (which raise the defense level of the portals) and multi-hacks that allow the portal to yield more items when hacked. It is noteworthy that the portals can be highly modified while the LV is the sole indicator of the player's power; the app does not include an additional numeric set of typical RPG skills, such as *Strength* or *Wisdom*. Players can earn so-called badges, obtained through the completion of specific tasks, for example, by hacking a certain number of unique portals or maintaining them for a specific period of time.[15] Long-time success in *Ingress* is facilitated by some degree of cooperation, the working together of players from the same faction in order to achieve their goals. Taking the idea of a party of adventurers to the extreme, strength comes in numbers, even though it is important to note that the game can be played alone without any difficulty.[16] "Parties" in *Ingress* are ultimately asynchronous; players are not required to be in the same physical location at the same time to work on a project. While keeping these recalibrations in mind, it is safe to say that *Ingress* assimilates strategic elements that refer back to the pre-history of RPGs.

According to academic lore, the genealogy of modern RPGs begins with Gary Gygax and Dave Arneson's 1974 *Dungeons and Dragons* (*D&D*). Calling *D&D* the "lingua franca" of RPGs, Erik Mona notes that its "most primal form" has a direct connection to strategic tabletop games, in particular *Chain-*

mail, a miniature game created by Gygax and set in a medieval world that Arneson later extended.[17] This development is noteworthy as it pertains to *Ingress*' partial return to the genre's beginnings and illustrates the frame oscillations mentioned above. RPGs rely on a base—Fine's secondary framework—that consists of a set of rules, reminiscent of the thematically-aligned battle simulations that preceded *D&D*.[18] Exploring the world beyond the battlefield, the game evolved and gradually added the element of role-playing, eventually granting a more free-form gaming experience realized in the third framework: "If you could imagine it, and the game master was willing to go along, it could happen."[19] However, *Ingress* neglects the third framework with regard to the acting out of roles and rather focuses on a specific, communal form of embodiment. Thus, it shifts toward LARPs and the physical locations in which they play out their reenactments.[20] While *Ingress* players often disregard props and costumes, the localities in which they gather in large numbers during important events regularly radiate a distinctly sci-fi feel.[21] The lack of traditional interpersonal narratives has to do with the game's reliance on mass media—the smartphone, of course, but also platforms such as Twitter—and thus mirrors a development that can also be observed in RPGs played on video game consoles and home computers. The publisher, however, fills in these gaps and creates a narrative in which important in-game events—at times decided by the mass actions of players—are acted out and visualized in videos that flesh out the world of *Ingress*. In other words, the effort to propel the storyline forward is to a certain extent outsourced, a tactic similar to early computer- and video games.

The scope and focus of this essay neither calls nor allows for a detailed history of digital RPGs, but it is necessary to sketch out some of the seminal and most influential titles, in particular with regard to features these games first implemented and to which *Ingress* takes recourse.[22] In the case of *D&D*, the diegetic world either directly translated into video- and computer game spin-offs or at least inspired games that reproduce its "lingua franca" in electronic code. The speed with which the emergent digital culture of the later 1970s and early 1980s adopted—and maybe even paralleled—pen-and-paper RPGs indicates an affinity between new media and the gaming model.[23] At this point it is noteworthy that the history of RPG evolution is in itself a contested topic; with the genre being in steady flux it is difficult to trace a clearcut genealogy in which one realization of the game precedes the other. As Sarah Lynne Bowman points out, "the first computer-based RPGs emerged in the 1970s, around the same time as the pen-and-paper games."[24] Already in the 1970s, one sees the first games implicitly referencing tabletop systems, for example Don Woods and Will Crowther's all-text computer program *Colossal Cave Adventure* and its Atari VCS remake by Warren Robinett, *Adventure* (this time around using simple graphics), in which the program-

mer "had to draw his *dungeons and dragons*" and "where players found weapon and other inventory."[25] While *Akalabeth*, the precursor to the long-running *Ultima* series, according to Matt Barton "included many conventions that are present in even the most modern CRPG," the next title of importance for *Ingress*' genealogy is in fact New World Computing's 1995 *Heroes of Might and Magic*. Barton cites "the choice of character class, attributes, a store from which to buy weapons and armor, a leveling system based on experience points, strategic combat with increasingly powerful foes, and a large area to explore" as some of these conventions.[26] They all, with the possible exception of character classes, find their equivalent in *Ingress* in some shape or form. While character classes are indeed absent from the app, some players understand themselves as fulfilling certain functions for their faction. *Ingress*, it seems, replays this concurrent evolution in front of our eyes and at the same time changes some parameters.

There are other cues that *Ingress* takes from famous digital trail-blazers. *Diablo*, released in 1996, is considered the prime example of a "limited character development system," where the role-playing element is sacrificed in favor of fantasy-soaked action, another reconfiguration that returns with a vengeance in the augmented reality game.[27] *Diablo* is also noteworthy in this context because it is part of a phalanx of computer games that populated the Internet with role-players in large numbers. Bridging the gap between isolated computer role-playing games (CRPGs) and online games, *Diablo* was instrumental in the development of the massively multiplayer online role-playing game (MMORPG), another strain of role-playing DNA that resurfaces in *Ingress*.[28] As Mitchell reminds us, already in "1994 the video game pioneer Nolan Bushnell was speculating about the possibility of network supported, intercity competitive games involving tens of thousands of participants on each team," a prophecy that fulfilled itself quickly via networked games.[29] *Neverwinter Nights* (1991–1997) stands out as the first successful MMORPG set in the official *D&D* universe and the first online game to use a graphics interface. In 1997, *Ultima Online* was launched, another benchmark in the evolution of fantasy oriented multi-player worlds that stands as the breakthrough system for internet gaming. The trend arguably culminated in the spectacular success of Blizzard's MMORPG *World of Warcraft* (*WoW*). Due to its immense impact on the popular imagination, it marks the apex of the symbiotic relationship between RPG and digital mass medium. As Michael J. Tresca writes, in 2004 *WoW* "exploded onto the scene" and "perfected what the other MMORPGs struggled to achieve."[30] Almost a decade later, *Ingress* profits from the genre's gradual migration into the digital realm and yet again reconfigures what it means to role-play with others "online" by taking the game to the streets. An interesting question, then, is how this transmogrification affects what Sarah Lynne Bowman calls fluidity in RPGs, the recali-

bration of ones' personality that "applies not only to our values, attitudes, and behaviors, but also to our very sense of ego-concept."[31]

Divergences and Overlaps: Role-Playing Elements in Ingress

In order to convincingly triangulate pen-and-paper systems, digital RPGs, and *Ingress*' augmented reality with regard to fluidity, certain core features of the genre have to be set in relation to each other. Bowman offers a useful definition of role-playing games that provides a guideline for the following comparison. Bowman writes, "A role-playing game should establish some sense of community through a ritualized, shared story telling experience amongst multiple players."[32] *Ingress* brings together an extremely large number of people, even though the communal aspect is complicated by the fact that the media component immediately jettisons the necessity of being in close proximity to other players. As I will show in greater detail later, *Ingress*' game mechanics also affect the gaming style in that the app—like many video game RPGs—simplifies the narrative created between players and focuses more on algorithms to decide outcomes rather than story-telling. Bowman's second core feature, similar to Fine's frame, concerns "some form of game system, which provides the framework for the enactment of specific scenarios and the solving of problems within them."[33] In contrast to the first main feature, *Ingress* easily adheres to this aspect, having the rules implemented and upheld through the technology and algorithms underlying the app. Her last point pertains to the possibility to "alter [the players'] sense of identity" in order to "develop an alternate Self through a process known as identity alteration."[34] The players and the guide, the game master, share "a co-created story space," a precondition that is reformulated in the context of *Ingress*.[35] An *Ingress* character is called an *Agent*, a fictional construct that nonetheless remains rather closely linked to the actual person enacting the role in the co-created story space, which in turn is inextricably intertwined with the real world.

What then is the story that the app tells? In *Ingress*, the sudden appearance of XM sets in motion a large-scale fight for the future of mankind. *Ingress* shares the sci-fi genre with RPG systems such as *Shadowrun* or *Star Wars*. As is the case with tabletop RPGs such as *D&D*, *Vampire: The Masquerade* or the German wizards-and-warriors system *Das Schwarze Auge* (*The Dark Eye*), the publishers flesh out the world in which the role-playing unfolds on various levels, from supplemental materials to multi-media tie-ins. While *D&D*, for example, spawned two feature films, *Vampire*'s World of Darkness produced a large number of novels and a TV show, some of these dealing with cataclysmic changes affecting the system's master narrative. The fantasy

world of *Das Schwarze Auge* serves as the setting for numerous computer games that incorporate the events of the pen-and-paper version. *Ingress*, too, offers supplements: novels accompany the game play, while actors playing in-game characters attend fan conventions and appear in the so-called *Ingress Reports*, elaborated newsreels reporting on everything game related. The announcer, Susanna Moyer, not only covers large-scale events but also directly "communicates" with non-player characters essential to the story.[36] Blurring the line between fact and fiction, one report for example investigates the "declining health of enlightened ideologue Roland Jarvis" in dramatic fashion, including a feed of CCTV footage showing an actor playing Jarvis being brought to some secret facility presumably for treatment. The reports thus create a continuous story arc that introduces new elements to the game and populates the in-game world with non-player characters that take up the role-playing where players may be too focused on their smartphones to engage in performative practices.

Closely related to the gradual extension of the in-game world, campaigns add to the feeling of continuity and coherence. Campaigns often advance the respective RPG's master narrative as they tend to deal with major events affecting at least parts of the fictional world. Usually stretched out over longer periods—both with regard to playing and in-game time—campaigns increase the density of the narrative elements and create networks between otherwise unrelated events. While *Vampire: The Masquerade* leveled the playing field through the cataclysmic events surrounding *Gehenna* (2004), *Das Schwarze Auge* opted for a radical reshaping of its main continent's political and social structures in *Das Jahr des Feuers* (*The Year of Fire*, 2004–2006). In the case of *Ingress*, campaign-like events take place when so-called *anomalies* are initiated. During these *anomalies*, players come together in larger urban areas to realize meticulously planned projects and to battle for supremacy. Expanding *Ingress'* master narrative, *anomalies* result in the emergence of higher concentrations of XM around the globe, which then triggers a multi-city artifact hunt. Depending on which faction wins the *anomaly*, the storyline advances differently, giving players the possibility to influence the course of *Ingress* history on the macro-scale. Multi-media texts, such as the aforementioned, elaborately produced videos, illustrate the outcome on the level of narrative, while changes made to the game play within the second framework also reflect the victory of one faction. Yet, what may sound like an augmented reality-telenovela follows a master plan: Hanke has stated in an interview that he has a blueprint for the current *Ingress* storyline planned out and that he is able to determine when it will come to a grand finale of the narrative.[37]

Whereas *Ingress'* narrative is thus to a certain extent prescribed (more akin in structure to early video games than pen-and-paper systems), the in-game world in *Ingress* is expanding exponentially. While the possibilities for

imagined landscapes are in principle infinite for the pen-and-paper systems, players often refer to maps that define the geopolitics of the game. To be sure, new game settings start out with a lot of *terra incognita* but, especially in long-lasting publications, the single topographical dots become connected over time as more and more supplemental material is released.[38] Games such as *Advanced Dungeons & Dragons* and the aforementioned *Das Schwarze Auge* offer full-fledged worlds, including their own history, culture, and geography. Video- and computer games (at least before online-games were common) feature semi-open-worlds, limited in principle through the capacity of the storage medium and the imagination of the programmers. With the size of the worlds and the degree of potential exploration varying, video game RPGs offer a somewhat non-linear trajectory that—in contrast to pen-and-paper systems—usually leads to the eventual denouement of the game with the options for differing paths toward completion being rather minimal at times. With the availability of new technological possibilities (including the option to purchase add-ons via the internet), the so-called sand-box games (Rockstar Games' *Grand Theft Auto IV* being a prime example) return to considerably larger maps—open worlds—that impose only theoretical boundaries and offer the player an experience that more closely resembles that of a pen-and-paper RPG in terms of in-game space. In this regard, *Ingress* takes the next step and declares the whole world its map.

The new media component of the app affects the tertiary framework in *Ingress*, a development that one also sees replicated in the move from pen-and-paper to video game RPGs as well, albeit in less extreme fashion.[39] While tabletop groups vary significantly in their application of role-playing elements, a certain minimum of communication between the characters' roles is essential to the experience. Role-playing elements of course differ from the mere execution of rules established through the game's structural base, e.g., how the system handles the outcome of action through dice rolls, categories, and numbers. Both the more mathematical and the interpersonal level of playing are present, even though—as explicated above—the ratio between the two factors can vary significantly.[40] Video and computer RPGs from the early machines of the 1970s roughly up to the 64-bit consoles at the end of the twentieth century reduced their role-playing elements mostly because interpersonal exchange was difficult to realize as the Internet was neither widely available nor efficient enough to allow for verbal exchanges in multiplayer games (except for players in the same physical location). Communication with non-player characters in the game world was usually possible but limited to only a few, repetitive, pre-programmed dialogue options.[41] Later, games such as *WoW*, at least theoretically, reinstated role-playing elements into the diegetic, digital landscape. However, Barton has convincingly argued that the interaction between MMORPG players (via headphones and micro-

phones, for example) differs significantly from those taking place between members of tabletop groups, and that the sheer number of participants in the former in fact renders the game's master narrative almost meaningless with regard to the actions of single players.[42] *Ingress* also performs such a reduction of role-playing elements and—while potentially bringing together large groups of players physically as well as virtually—neither encourages nor necessitates the production of interpersonal fantasy narratives, even though the *Ingress* community actively discusses the game itself on social media platforms.[43]

In most RPGs, characters are assigned attributes (regulated in some shape or form) that the players can improve over time. When certain tasks or quests are completed, players are awarded points, which in turn allow them to increase the power level of their character. Whenever a pre-determined threshold is crossed, the character's level increases, a development that—regulated through the rules of the system—becomes gradually more time-consuming. *Ingress* follows this pattern to a degree; players collect XM and use it to attack, defend, or modify a portal, adopting the rule-based part of fighting in role-playing. As briefly mentioned above, the players receive Access Points (AP) that ultimately raise their characters' level, increasing their ability to deploy more powerful resonators and other items. Yet, by comparison, the characters in *Ingress* are simplified, bare-bone constructs that encourage players to understand themselves as taking up the role of an *Agent*. They only differ in their affiliation to one of the factions, their names, and the number of AP they have collected. However, many *Ingress* players distinguish themselves with regard to their approach to the game. Some specialize in solving cryptic riddles that may hold the key to the next *anomaly*, while others, for example, focus on the organization of group attacks. This said, one significant difference between the smart phone game and other variants of RPGs becomes quickly apparent. If one defines RPGs solely through the aspect of performative player-to-player interaction, then *Ingress* cannot be considered a role-playing game. However, the genre has always been subject to modifications with regard to how the role-playing is enacted. As I have shown, many elements in *Ingress* are directly reminiscent of other types of RPGs, borrowed from strategy board games as well as pen-and-paper systems, LARPS, and digital games, including MMORPGs.

Reconfiguring Urban Space: Ingress and Mediated Modes of Experience

As outlined above, *Ingress* selectively picks elements from role-playing games, a genre that has historically been in constant flux. While certain

aspects are conserved and intensified in Google's app, others are drastically reduced or jettisoned altogether. The question now becomes how the inscription of *Ingress*' specific brand of role-playing into modern, predominantly urban public spaces affects postmodern modes of experience.[44] On the most basic level, *Ingress* injects a game-related playfulness into the city, regardless of the sincerity and competitive spirit that some players exhibit as *Agents* of either the Enlightened or the Resistance. As Gary Alan Fine notes, "fantasy worlds constitute a 'social world'" and the "fantasy content, shared by participants, coupled with the complex subsociety of gaming, suggests that this truly constitutes a 'universe of discourse.'"[45] Urban space, usually heavily regulated and restricted by law and convention, is turned into a discourse in which rigid patterns of meaning are challenged. A "'make-believe' world set apart from the everyday world" is thus performed in plain sight, producing a parallel narrative in the process. In this respect, the app generates a form of community similar to that of online groups such as MMORPG guilds, but realizes these communal happenings in the streets, parks, and social spaces of a given community (and beyond). In order to assess the game's complex effects on the subject's modes of experience, I look at three prominent urban theorists whose ideas in conjunction situate the RPG-like structure of *Ingress* vis-à-vis the networked societies of the twenty-first century.

To be clear, my argument is not primarily interested in hailing *Ingress* as a means to draw role-players (or their stereotypes) out of their clichéd basements. Bowman already does a great job in her study outlining the criticisms and campaigns leveled against RPGs, while making a valid claim in favor of the cognitive and social benefits of the genre.[46] Rather, I am interested in ways in which Google's app can illuminate the subject under the auspices of ubiquitous computing in conjunction with role-playing. In an interview with Georg Pichler, Hanke states "ten years from now reality and the virtual world will interact seamlessly," suggesting that augmented reality games have not yet realized their full potential.[47] In order to analyze some of these potentials, I turn to Guy Debord and his technique of *dérive*, Mark Hansen's concept of *bodies in code*, and Jean Baudrillard's philosophy of the *simulacrum*. Debord's writings help one to understand the geopolitical implications of the game, taking into account a subversive or even utopian under-current endemic to the playful interaction with a given spatial paradigm.[48] Hansen's work enables one to rethink the role of the body in highly mediated environments, a change in focus that not only challenges notions about the validity of mediated experiences, but also queries the phenomenology of augmented reality writ large.[49] Finally, Baudrillard's often-cited concept of the *simulacrum*—the dangerous copy without an original—allows one to ponder the ontological quality of the images that playing *Ingress* produces when the digital and the physical world overlap.[50] It is not my primary goal to rethink Debord, Hansen, and

Baudrillard in this essay. Rather, the theories under consideration here help illustrate how Google's app implicitly interferes with and queries questions of body-politics, phenomenology, and image theory respectively.

The scope of this essay does not allow me to go into greater detail with regard to urban theory, but it should be noted that Debord, Hansen, and Baudrillard to a certain degree all belong to an intellectual tradition that queries space as part of the system of capitalist accumulation. While my argument is not contingent upon a critique of capitalist ideas—after all *Ingress* is a commercial product even though it can be played for free—the game clearly partakes in the production of social space staged in the public sphere. Critical in this regard is Henri Lefebvre whose writings on the city directly influenced Debord. As Lefebvre argues in his neo–Marxist attempt to shatter bourgeoisie ideology—what he terms "mystification"—through the "*autocritique* of the everyday," the streets are a contested space organized by signals, symbols, and signs that "we read and move through."[51] His thinking also informs the writings of Michel de Certeau who in *The Practices of Everyday Life* argues that consumption is a means of production by those who are not actually producers but "reappropriate the space organized by techniques of sociocultural production."[52] For him, walking becomes an intervention into "an electronicized and computerized megalopolis," an act that is reminiscent of the "hunters and rural folks of earlier days."[53] Again, while I am hesitant to grant *Ingress* the political currency necessary to declare it a direct representation of these theories, the insertion of the body into urban space marked by a high saturation with electronic networks is a concept that—as I show in my following analysis of Debord, Hansen, and Baudrillard—helps to illustrate how Google's app may affect our understanding of the city in the twenty-first century.

Debord, the driving force behind the avant-garde *International Situationist* movement, championed the concept of *dérive* as a means to re-read the city under late-capitalism: "Among the various situationist techniques, *dérive* constitutes the act of a hasty traversal of varied environments."[54] Reminiscent of flânerie, *dérive*, according to Debord, leads to a desired feeling of being lost and afloat in the streets, which in turn recalibrates the sensorium of the subject:

> One or more persons devoted to *dérive*—for a shorter or longer period of time—eschew their general automatisms with regard to patterns of movement and action, and disregard their relations, work and leisure activities, in order to give themselves up to the suggestions of the topography and its respective encounters.[55]

The result is a geo-psychological experience of the urban environment that fosters a sense of adventure, which it uses as a revolutionary tool against what Debord terms the sedated *society of the spectacle*. This sense of adventure

and the possibility of chance encounters is an integral part of *Ingress* as players move quickly through spaces that are not necessarily part of their daily itinerary. The game reestablishes the city as a map that can be reexamined and reappropriated, facilitating a new, coincidental outlook on the world as one moves from portal to portal. My goal is not to charge *Ingress* with an explicitly political energy: if at all, Debord's subversive impetus is implemented into the game as something decidedly "not real" in that its narrative incorporates the possibility of revolution into its background story. While the game uses terms such as *Resistance* to label one of its competing factions, and players are referred to as *Agents*, it is not subversive in and of itself. However, the utopian potential inscribed in new modes of experiencing the city re-emerges in the game, role-playing the city as if it were a stage for performances outside of the accepted norms and off the beaten paths.

Ingress players find new ways to engage with their surroundings as they drift through the city, even though their interactions are always mediated, filtered through the "scanner" of their smartphones. The game—cheating notwithstanding—cannot be played without the players' movement through Euclidean space. The centrality of the "portals" with regard to a successful taking part in the action illustrates the allure of setting up "new" physical places underneath the digital foil. While Niantic has the last word in establishing the portals, players are allowed to submit suggestions for new portals. As Google states on its *Ingress* web site, the acceptance criteria for "good portals" include:

> A LOCATION WITH A COOL STORY, A PLACE IN HISTORY OR EDUCATIONAL VALUE, […] A COOL PIECE OF ART OR UNIQUE ARCHITECTURE, […] A HIDDEN GEM OR HYPER-LOCAL SPOT […] More off-the-beaten-path tourist attractions (i.e., if you weren't a local, you wouldn't necessarily know to go here). A COMMUNITY GATHERING PLACE. […] A POINT OF INTEREST THAT FACILITATES DISCOVERY/EXERCISE. Promotes the idea of "Adventures on foot." Encourages outdoor exploration.[56]

The selection of suitable "portals" presupposes, at least to a certain extent, a familiarity with the environment and a wish to contribute to the hybrid world of *Ingress*. Players will preferably establish historically or culturally significant portals to which they have relatively easy access (while the competition may not) in their everyday lives, contributing to the diegetic world and its master narrative in highly personalized ways. As a result, the quest for suitable portal locations may foster knowledge about and awareness of the geo- and topography in the vicinity of one's home, but at the same time alter its meaning by interacting playfully with history. This produces a utopian experience—no matter how fallacious—of having the power to write the narrative rather than being subjected to one.

A second critical aspect is the convergence and amalgamation of physical

experience and technology, to which *Ingress* also contributes. Hansen labels individuals who experience technology as an extension rather than a limitation "bodies in code," and while his study focuses on aesthetic theories and their application to multi-media art (explicitly disregarding traditional video games), the technologically enhanced physical experience he describes corresponds to the one taking place in *Ingress*. Hansen argues that embodiment is realized in "conjunction with technics."[57] Thus, augmented realities expand the scope of bodily (motor) activity, instead of confining them. The immersion in virtual realities broadens human perception and the range of experience. Hansen declares every reality a "mixed reality" and states that "motor-activity […] holds the key to fluid and functional crossings between virtual and physical realms."[58] His theories help one to see how *Ingress* bridges the gap between the analog and the digital: the actual bodies of the players are brought back into the public's eye. If postmodernity and its digital networks indeed reconfigure space and render it a surface—an argument that also resonates with Baudrillard's skepticism toward our modes of experience—the app rethinks that condition. The importance of spatiality is reinforced and brought to the fore again, while temporality shifts from pure simultaneity to a continuum in which actions are played out in asynchronous ways. While tabletop RPGs and many video games "slow down" in-game time by breaking up combat into stretched out units—"in order for players to fully examine each decision"[59]—*Ingress* happens in real time, with participants even securing and destroying portals while driving in their cars.

In general, *Ingress* favors the technical component when it comes to ensuring a smooth gaming experience with the smartphone replacing the game master as the referee. In this respect it is closer to digital RPG renditions, minimizing the need for discussions of rules and relying more on algorithms than literary interpretation with regard to the outcome of the actions. As soon as the machine sanctions the move, the player's action becomes part of the game world as the dice roll (and by proxy, chance) loses in importance. *Ingress* visualizes the networked quality of new media in impressive ways, highlighting our reliance on technology as well as rendering visible the transnational vectors of modern mass-communication. The game's maps with their links between portals are playful visualizations of information flows similar to the ephemeral data streams of mass-communication. *Ingress*' visualizations range from local portal links to huge projects that can span extremely large areas. In each case, the game connects dots, creating a palimpsest of blue and green lines that denotes the moves made by the players as part of the game—a digital diagram of the postmodern gospel of constant connectivity that has even become an aesthetic practice known as field art. The app thus gives form to Hansen's theoretical framework that sets up the city as a (partially made-up) narrative in which meaning is negotiated through tech-

nology in conjunction with the human body. In putting their augmented bodies "out there," players perform the intervention of new media into the quotidian as a game.

Last but not least, *Ingress* squarely positions the digital image vis-à-vis a concrete reality that the former allegedly has undermined—as theorists of the postmodern have argued—to a point where the latter is distorted beyond recognition. Baudrillard famously assumes an existential crisis playing out "behind" the image, a development giving rise to the reign of the *simulacrum*. He explains, "Such would be the successive phases of the image: it is a reflection of a profound reality; it masks and denatures a profound reality; it masks the absence of a profound reality; it has no relation to any reality whatsoever: it is its own pure simulacrum."[60] *Ingress* relates to this discussion as it comments on Baudrillard's assumed deterioration and/or disappearance of the physical world. The game suggests that the image (the representation on the "scanner") indeed differs from reality (the landmark doubling as portal) but still relates to the original place depicted on the screen. This is not to say that *Ingress* is the solution to the presumed loss of depth in postmodernity—as articulated by, among others, Paul Virilio—but rather that it addresses the problem and offers a conciliatory perspective. The networks of digital technology, Virilio argues, alter the meaning of space as they allow users to connect without being physically present in the same location.[61] While not all is well just because a physical object functions as the foundation for a digital pastime, a two-way connection between the two ontological layers is established. Further studies will be necessary to gauge the relevance of the actual topography underlying the game-play, and they may find that the digital image indeed overshadows or obfuscates the (historically charged) narrative right in front of the players' augmented eyes. But the general engagement with the surrounding landscape (even if mediated) is undeniable.

The player's gaze oscillates between the abstract representation on the screen—and it is noteworthy here that the graphical interface could be much more elaborate if so desired—and its more detailed real-world equivalent. In the process, both matrices are sutured together, softening Baudrillard's critique of the (digital) image: *Ingress* suggests that reality is staging a comeback in the age of ubiquitous computing. Role-playing's shared communities—filtered through the electronic mass media sieve—reverse the experiential insufficiency attributed to the rise of the digital image that knows no original. Role-playing *bodies in code* counter the absence of meaning and recharge that which is behind the screen with a new narrative. The result is a hybrid image that imbues the digital representation with a surrogate *there has been* in the sense of Roland Barthes, who claims that any photograph is linked with a "thing that has been there" via an umbilical cord of light.[62] The digital construct is inscribed with a past that it borrows from the landmark's history

and then injects into the story being told within the expanding *Ingress* universe. While this could widen the gap between reality and image world, there is also a more conciliatory reading in which the injection of corporeality into a fantastic game world shared by many creates a Third Space that counters a possible ontological and existential crisis brought forth by the *simulacrum* that Baudrillard predicted in the 1980s. In that case, the fear of a vanishing reality is alleviated by an opening up toward the (allegedly escapist) fantasies that are so central to games in general and RPGs in particular.

Conclusion: Toward the Endgame

Ingress superimposes digital landscapes over Euclidean space and in the process inscribes its role-playing narrative into the fabric of the city, even if this only happens in a historically contingent mode of pretense. Thus, the underlying aspects of RPGs illustrated in this essay bleed into the first framework, a playful exploration of a (usually heavily regulated) realm, the city. As *Ingress* adds an element of physical mobility to the mix and creates an overlap between diegetic and non-diegetic topographies, the game impacts experiences of the city in a way reminiscent of seminal critical theories of urban space.[63] The application of these theories on urban space should not suggest that the GPS-based app has political implications *per se* but rather that it illuminates specific socio-political and cultural conditions shaping life in the twenty-first century. Urban theorist Joel Kotkin addresses issues of identity and spirituality in the cities of the twenty-first century and argues that "urban areas, in the end, must be held together by a consciousness that unites their people in a shared identity."[64] What was achieved by priests in earlier times, he claims, is now achieved through dominant paradigms, such as "due process, freedom of belief, the basic right of property."[65] Role-playing games, including augmented realities embedded in living fictions such as *Ingress*, offer another venue to add an adhesive to communities after the digital divide even though one has to be careful not to take the utopian potential at face value. Researchers, I contend, have plenty of reasons to conduct more theoretical, cognitive, and sociological studies on *Ingress* that will further the debates brought up in this essay.

In conclusion, I would like to point out the release of another related Google product, *Endgame*, as it continues the evolution toward augmented reality RPGs begun by *Ingress*. In an attempt to bring together digital media, film, literature, and the physical world, *Endgame* closes some of the gaps that still separate *Ingress* from traditional role-playing games. The multi-media project kicked off on October 7, 2014, with the release of the first of three novels, *Endgame: The Calling*, supplemented by short films, Google apps, and

even a planned feature film. Man-on-man combat becomes possible in *Endgame*, while the reward of the densely plotted campaign is real money. Three "pots of gold" are hidden across the globe, and *Endgame*'s multi-media narrative yields clues to players as to where to find these treasures.[66] Thus, while the amalgamation of the first and third framework one encounters in *Ingress* continues, additional RPG tropes (such as the hidden gold or the groups of twelve characters that comprise a party in *Endgame*) are added to the mix. In other words, as in RPGs, the players shape the future of their in-game world, with the difference that it is not an isolated party that creates their own storyline but rather one master narrative decided by representatives of the whole faction, updating the parameters of role-playing as well as proving that the genre continues to influence life in the twenty-first century, arguably on a bigger scale than ever before. With Google's current setbacks regarding its augmented reality project *Glass*, the next generation hardware comes in the form of *Android Wear*. The gadget—essentially a multi-media wristwatch—has been made compatible with *Ingress* in 2015 in part to make the game more conducive to interpersonal exchanges.[67] Looking at independent developments such as the virtual reality goggle *Oculus Rift* (even though at the moment no advancements have been made to integrate the app with *Rift*), it is easy to imagine how the *dungeons and dragons* of more traditional gaming systems will virtually inhabit the very same university campuses and parks that already are *Ingress*' battleground.

NOTES

1. Mirjam Hauck, "Eine Runde Weltherrschaft," *Süddeutsche Zeitung*, accessed June 26, 2015, http://www.sueddeutsche.de/digital/google-spiel-ingress-eine-runde-weltherrschaft-1.2047760 (my translation).

2. William J. Mitchell, *The City of Bits* (Cambridge: MIT Press, 1996), 41.

3. While *Ingress* can of course be played in non-urban areas, the majority of the action takes place in larger cities with their plethora of portals.

4. "Ingress' John Hanke & Flint Dille: Designing Living Fiction," *DICE*, accessed June 26, 2015, https://www.youtube.com/watch?v=c8YTDEJyfs0.

5. Let me briefly cite two key intellectual figures that define the debate on postmodern space implied here. First, Frederic Jameson famously states that in postmodernity "depth is replaced by surface, or by multiple surfaces (what is often called intertextuality is in that sense no longer a matter of depth)." Fredric Jameson*, Postmodernism, or The Cultural Logic of Late Capitalism* (London: Verso, 1991), 12. Second, Paul Virilio, the patron saint of the postmodern, established his idea of the collapse of space and time in cyberspace, arguing that the concept of *telepresence* counters the twentieth-century paradigm in which the idea of traversing through and covering of vast areas of space was dominant. This move from real-space infrastructures, such as airports or railway station, to interactive and immaterial ones, leads to the phenomenon of "being telepresent." Paul Virilio, *Open Sky* (New York: Verso, 2008), 10.

6. Greg Costikyan, "Games, Storytelling, and Breaking the String," in *Second-Person: Role-Playing and Story in Games and Playable Media*, Pat Harrigan et al., eds. (Cambridge: MIT Press, 2007), 12.

    7. Gary Alan Fine. *Shared Fantasy: Role-Playing Games as Social Worlds* (Chicago: University of Chicago Press, 1983), 3.
    8. *Ibid.*, 240.
    9. "Ingress (game)," *Wikipedia*, accessed June 26, 2015, http://en.wikipedia.org/wiki/Ingress_(game).
    10. Andrea Di Simone, "Interview with Niantic's John Hanke," *DecodeIngress*, accessed June 26, 2015, http://decodeingress.me/2013/08/19/interview-with-niantics-john-hanke.
    11. *Ibid.*
    12. "Ingress' John Hanke & Flint Dille: Designing Living Fiction," *DICE*, accessed June 26, 2015, https://www.youtube.com/watch?v=c8YTDEJyfs0.
    13. In one of his blogs, Martin Boonham writes that in "typical role playing game (RPG) fashion, individual players also earn experience points," highlighting one of the many shared characteristics between traditional RPGs and *Ingress*. Martin Boonham, "Google Enters Augmented Reality with New Ingress Game," *Mapcite*, accessed June 26, 2015, http://www.mapcite.com/posts/2012/december/google-enters-augmented-reality-with-new-ingress-game.aspx.
    14. *Ingress* cites a common trope of modernity and employs a representation of space that is deliberately minimalistic and appeals to certain concepts about how "scanners" in the sci-fi genre are supposed to look. To be sure, the capacity of the smartphone would have allowed for a Google Map–like representation of the surroundings but he programmers decided against it.
    15. For details on how to play the game see the web site *DecodeIngress*, accessed June 26, 2015, http://decodeingress.me/ingress-manual/leveling/.
    16. Recently the possibility of "soloing," the completion of individual quests not directly linked to the master narrative of *Ingress*, has been added to the game. While players are often completing their tasks on their own, they still remain a part of their faction.
    17. Erik Mona, "From the Basement to the Basic Set: The Early Years of *Dungeons and Dragons*," in *Second Person: Role-Playing and Story in Games and Playable Media*, Pat Harrigan, et al., eds. (Cambridge: MIT Press, 2007), 25.
    18. *Ibid.*
    19. Costikyan, 5.
    20. In LARPs players "physically, and socially, act out their characters' roles […]; it can be argued that they are closer in form to improvisational theater than to their RPG cousins." Pat Harrigan and Noah Wardrip-Fruin, "Tabletop Systems," in *SecondPerson: Role-Playing and Story in Games and Playable Media*, Pat Harrigan et al., eds. (Cambridge: MIT Press, 2007), 2.
    21. See for example "Ingress Report: Raw Feed, Sept 4," accessed June 26, 2015, https://www.youtube.com/watch?v=UiyvXZ1pzb8.
    22. As Michael J. Tresca notes, there exists a "direct line of evolution from Middle-Earth to *Dungeons & Dragons* to computer role-playing games (CRPGs)." Michael J. Tresca, *The Evolution of Role-Playing Games* (Jefferson, NC: McFarland, 2011), 60.
    23. Tresca names the 1982 *Advanced Dungeons and Dragons: Cloudy Mountain* as "one of the first RPGs to be officially licensed for a gaming platform." Tresca, 138. Interestingly, it took D&D (minus the *Advanced*) six more years to become "part of the CRPG platform that had spawned so many imitators." Tresca, 141.
    24. Sarah Lynne Bowman, *The Function of Role-Playing Games: How Participants Create Community, Solve Problems and Explore Identity* (Jefferson, NC: McFarland, 2010), 23.

25. Steven L. Kent, *The Ultimate History of Video Games* (New York: Three Rivers Press, 2001). 186–187.

26. Matt Barton, *Dungeons and Desktops: The History of Computer Role-Playing Games* (Wellesley, MA: A.K. Peters, 2008), 1.

27. *Ibid.*, 318.

28. MMORPGs are defined as "computer network-mediated games in which at least one thousand players are role-playing simultaneously in a graphical environment." Miroslaw Filiciak, "Hyperidentities: Postmodern Identity Patterns in Massively Multiplayer Online Role-Playing Games," in *The Video Game Theory Reader*, Mark J.P. Wolf et al., eds. (New York: Routledge, 2003), 87.

29. Mitchell, *City*, 64.

30. Tresca, 166.

31. Bowman, 138.

32. *Ibid.*, 11.

33. *Ibid.*

34. *Ibid.*, 11–12.

35. *Ibid.*, 12.

36. "Ingress Report: Raw Feed, Aug 28," accessed June 26, 2015, https://www.youtube.com/watch?v=oWG1mdZMF9o.

37. Georg Pichler, "'Ingress'-Erfinder: In zehn Jahren werden Realität und Videospiele verschmelzen," *Der Standard*, accessed June 26, 2015, http://derstandard.at/2000009068912/Ingress-Erfinder-In-zehn-Jahren-werden-Realitaet-und-Videospiele-verschmelzen (my translation).

38. It is neither "uncommon for RPGs to be based on licensed properties" nor "to generate novels and short-stories based on their proprietary game world and characters." Harrigan and Wardrip-Fruin, 3.

39. Digital RPGs "have limited repeat playability because they are tied to an ultimately linear story." Costikyan, 9.

40. "Paper RPGs […] are social affairs; players get together periodically to play, and spend at least as much time role-playing for their friends as they do trying to maximize their character's effectiveness in a purely structural context." Costikyan, 9.

41. Costykian argues that "the game systems of tabletop RPGs are in some ways very similar to those of digital RPGs—sometimes identical, in fact, in the case of computer RPGs licensed from tabletop games. They are, however, vastly more freeform." *Ibid.*

42. See Barton, 365–426.

43. Many of these observations are based my own *Ingress* experiences. Additional input and guidance have been provided by a group of German players, in particular Kai Timmermann (Agent @MrT).

44. Bowman brings the postmodern condition into contact with RPGs. "In the postmodern world—particularly with the advent of online communities—humans must establish a stronger fluidity in order to adept to the fast pace of cultural change," thus creating a "sense of multiplicity." Bowman, 153.

45. Fine, 231.

46. Bowman's study offers convincing proof that even "though mainstream sources misunderstand and subsequently dismiss role-playing games as escapist, time-wasting, and even potentially dangerous, the evidence from academic and professional sources clearly delineate numerous positive benefits." Bowman, 102.

47. Pichler.

48. Guy Debord. "Theorie des Umherschweifens," in *Situationistische Interna-*

tionale: Der Beginn einer Epoche, Roberto Ohrt et al., eds. (Hamburg: Edition Nautilus, 2008), 64–67.

49. Mark B.N. Hansen, *Bodies in Code: Interfaces with Digital Media* (New York: Routledge, 2006).

50. Jean Baudrillard. *Simulacra & Simulation* (Ann Arbor: University of Michigan Press, 1994).

51. Henri Lefebvre. *Key Writings*. Stuart Elden et al., eds. (New York: Continuum, 2003), 88.

52. Michel de Certeau. *The Practice of Everyday Life*. Transl. Steven F. Rendall (Berkeley: University of California Press, 1984), xiv.

53. *Ibid.*, xxiv.

54. Debord, 64 (my translation).

55. *Ibid.* (my translation).

56. "Google Support," accessed June 26, 2015, https://support.google.com/ingress/answer/3066197?hl=en&ref_topic=3261457.

57. Hansen, 20.

58. *Ibid.*, 2.

59. Bowman, 114. She further elaborates that "this slowing down of time into manageable segments may be an essential aspect of human consciousness." *Ibid.*

60. Baudrillard, 6.

61. Further, Virilio claims that "the urbanization of real time is in fact first the urbanization of *one's own body* plugged into various interfaces" so that the body is "becoming the last urban frontier." Virilio, 11. It is interesting to see how games such as *Ingress* realize and at the same time challenge the idea of the body as the nexus of telepresence.

62. The observer of a photograph knows that his gaze rests on something that once existed and, according to Barthes, "has been here." Roland Barthes, *Camera Lucida: Reflections on Photography* (New York: Hill and Wang, 1982), 77.

63. In her study on functions of role-playing games, Bowman refers to the performative aspects of RPGs, drawing a line from the latter to avant-garde movements such as Augusto Boal's *Theater of the Oppressed*, which seek "to liberate communities and individuals from oppressive situations and beliefs by challenging existent power structures." Bowman, 40.

64. Joel Kotkin, *The City: A Global History* (New York: Modern Library, 2006), 157.

65. *Ibid.*, 159.

66. Nathan Ingraham, "Welcome to Endgame," *TheVerge*, accessed June 26, 2015, http://www.theverge.com/2014/10/7/6927605/welcome-to-endgame-google-worldwide-augmented-reality-game.

67. Steve Dent, "Google Ingress Android Wear," *Engadget*, accessed June 26, 2015, http://www.engadget.com/2015/02/27/google-ingress-android-wear/.

Bibliography

Barthes, Roland. *Camera Lucida: Reflections on Photography*. Translated by Richard Howard. New York: Hill and Wang, 1982.

Barton, Matt. *Dungeons and Desktops: The History of Computer Role-Playing Games*. Wellesley: A.K. Peters., 2008.

Baudrillard, Jean. *Simulacra & Simulation*. Ann Arbor: University of Michigan Press, 1994.

Boonham, Martin. "Google Enters Augmented Reality with New Ingress Game."

Mapcite. Accessed June 26, 2015. http://www.mapcite.com/posts/2012/december/google-enters-augmented-reality-with-new-ingress-game.aspx.

Bowman, Sarah Lynne. *The Function of Role-Playing Games: How Participants Create Community, Solve Problems and Explore Identity*. Jefferson, NC: McFarland, 2010.

Costikyan, Greg. "Games, Storytelling, and Breaking the String." In *SecondPerson: Role-Playing and Story in Games and Playable Media*. Edited by Pat Harrigan and Noah Wardrip-Fruin. Cambridge: MIT Press, 2007. 5–13.

Debord, Guy. "Theorie des Umherschweifens." In *Situationistische Internationale: Der Beginn einer Epoche*. Edited and translated by Pierre Gallissaires, Hanna Mittelstädt and Roberto Ohrt. Hamburg: Edition Nautilus, 2008. 64–67.

De Certeau, Michel. *The Practice of Everyday Life*. Translated by Steven F. Rendall. Berkeley: University of California Press, 1984.

Dent, Steve. "Google Ingress Android Wear." *Engadget*. Accessed June 26, 2015. http://www.engadget.com/2015/02/27/google-ingress-android-wear/.

Di Simone, Andrea. "Interview with Niantic's John Hanke." *DecodeIngress*. Accessed June 26, 2015. http://decodeingress.me/2013/08/19/interview-with-niantics-john-hanke.

Filiciak, Miroslaw. "Hyperidentities: Postmodern Identity Pattern in Massively Multiplayer Online Role-Playing Games." In *The Video Game Theory Reader*. Edited by Mark J.P. Wolf and Bernard Perron. New York: Routledge, 2003. 87–102.

Fine, Gary Alan. *Shared Fantasy: Role-Playing Games as Social Worlds*. Chicago: University of Chicago Press, 1983.

Frey, James, and Nils Johnson-Shelton. *Endgame: The Calling*. New York: Harper Collins, 2014.

Hansen, Mark B.N. *Bodies in Code: Interfaces with Digital Media*. New York: Routledge, 2006.

Harrigan, Pat ,and Noah Wardrip-Fruin. "Tabletop Systems." In *SecondPerson: Role-Playing and Story in Games and Playable Media*. Edited by Pat Harrigan and Noah Wardrip-Fruin. Cambridge: MIT Press, 2007. 1–4.

Hauck, Mirjam. "Eine Runde Weltherrschaft." *Süddeutsche Zeitung*. Accessed June 26, 2015. http://www.sueddeutsche.de/digital/google-spiel-ingress-eine-runde-weltherrschaft-1.2047760.

Ingraham, Nathan. "Welcome to Endgame." *TheVerge*. Accessed June 26, 2015. http://www.theverge.com/2014/10/7/6927605/welcome-to-endgame-google-worldwide-augmented-reality-game.

Jameson, Fredric. *Postmodernism, or The Cultural Logic of Late Capitalism*. London: Verso, 1991.

Kent, Steven L. *The Ultimate History of Video Games*. New York: Three Rivers Press, 2001.

Kotkin, Joel. *The City: A Global History*. New York: Modern Library, 2006.

Lefebvre, Henri. *Key Writings*, edited by Stuart Elden et al. New York: Continuum, 2003.

Mitchell, William J. *City of Bits: Space, Place, and the Infobahn*. Cambridge: MIT Press, 1996.

Mona, Erik. "From the Basement to the Basic Set: The Early Years of *Dungeons and Dragons*." In *SecondPerson: Role-Playing and Story in Games and Playable Media*. Edited by Pat Harrigan and Noah Wardrip-Fruin. Cambridge: MIT Press, 2007. 25–30.

Pichler, Georg. "'Ingress'-Erfinder: In zehn Jahren werden Realität und Videospiele verschmelzen." *Der Standard*. Accessed June 26, 2015. http://derstandard.at/

2000009068912/Ingress-Erfinder-In-zehn-Jahren-werden-Realitaet-und-Videospiele-verschmelzen.

Tresca, Michael J. *The Evolution of Fantasy Role-Playing Games.* Jefferson, NC: McFarland, 2011.

Virilio, Paul. *Open Sky.* Critical Thinkers Edition. New York: Verso, 2008.

Role-Playing and Strategy Games

Advanced Dungeons & Dragons. TSR Games. 1977.
Chainmail. Guidon Games et al. 1971.
Dungeons & Dragons. TSR Games. 1974.
Risk: The Continental Game. Parker Bros. et al. 1959.
Das Schwarze Auge. Schmidt Spiele et al. 1984.
Star Wars: The Role-Playing Game. West End Games, 1987.
Shadowrun. FASA Corporation, 1989.
Vampire: The Masquerade. White Wolf Publishing, 1991.

Video and Computer Games

Advanced Dungeons & Dragons: Cloudy Mountain. Mattel, 1982.
Akalabeth. California Pacific Computer Co., 1979.
Adventure. Atari, 1979.
Colossal Cave Adventure. CRL, 1976.
Diablo. Blizzard Entertainment, 1996.
Grant Theft Auto IV. Rockstar Games, 2008.
Heroes of Might and Magic. New World Computing, 1995.
Ingress (closed release). Google, 2012.
Ingress (general release). Google, 2013.
Neverwinter Nights. Strategic Simulations Inc. 1991.
Ultima. California Pacific Computer Co. et al., 1979.
Ultima Online. Electronic Arts, 1997.
World of Warcraft. Blizzard Entertainment, 2004.