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Put on Your Game Face: Designing the Researcher Presence in Immersive Digital Environments

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Abstract

Researchers' appearance and behavior may influence study participants' thoughts, feelings, and behaviors during in-person data collection. However, investigators in online settings can manage this influence by leveraging platform affordances to craft purposeful, scripted presences. We argue for a revisioning of approaches to researcher presence in immersive digital environments. In particular, we draw on the metaphor of a video game *non-player character* (NPC) to position researchers as characters embedded in study narratives. The researcher-as-NPC is designed by purposefully selecting visual, verbal, and behavioral features in relation to the norms and requirements of both the research and the immersive digital environment. This balance allows an avatar to function as a more transparent research tool and as a character within both the research and world narratives, rather than as a mere extension of researcher agency. We offer two case studies – one in an open digital world of *Second Life* and one in a structured online game *World of Warcraft* – to illustrate how this framework can contribute to effective parameters for participant interaction that minimize potential threats to validity and advance specific research objectives.

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1. Introduction

Methodological considerations about human subjects research online (as compared to offline contexts) have generated considerable attention in existing literature. For example, scholars have examined differences in online versus offline settings for surveys (Keusch, 2012), interviews (Shapka, Domene, Khan & Yang, 2016), and focus groups (Lang & Hughes, 2004). However, with the notable exception of online ethnographers (e.g., Boellstorff, Nardi & Pearce, 2012), little attention has been paid to how the researcher presence in immersive digital environments (IDEs) research may require guidelines, tools, and evaluation criteria distinct from those used in offline research settings. This article addresses this under-examined aspect of the researcher presence in IDE investigations, proposes a framework to examine and design the appearance and behaviors of the researcher in digital research environments, and reports two illustrative case studies. This framework suggests that conceptualizing the researcher as a "non-player character" (NPC) facilitates more purposeful articulation of researcher language, interactions, and digital bodies.

2. Researcher Presence in Immersive Digital Environments

Investigators use various techniques to address the influence of their physical and social presences, from designing double-blind experiments in which neither participants nor researchers are aware of participants' conditions (Green & Paluck, 2004) to creating interview scripts or standardized instructions to reduce variations in delivery (Gosling & Johnson, 2010). In practice, however, different research requirements or participant behaviors often require significant improvisation on the part of the researcher, especially online (Baym, 2009).

To consider the influence of researchers in a digital research environment is, we argue, to consider the development and maintenance of their social and individual *presence*. Social presence is the degree to which mediated interactions feel rich, intimate, and immediate (Lombard & Ditton, 1997) and it relies in part on characteristics of the medium (e.g., visual and aural cues) and on interactivity (i.e., iterative input and response). Researchers can purposefully design and perform visual, verbal, and behavioral expressions through digital bodies to enhance or minimize participants' experience of the researcher's social presence and as a "character" in the narrative of the research. Drawing on ways that digital bodies perform as social actors in IDEs (see Ausburn, Martens, Dotterer & Calhoun, 2009) we discuss how adjusting the appearance and interactions of the researcher's online representation can help establish the desired level of social presence.

2.1 Avatar Appearance

Avatars are, in a sense, visual props in IDEs (Linderoth, 2005) where an identity may be performed via "expressive equipment" of customizable features (cf. Goffman, 1959, p. 22). Avatar design choices function as symbolic codes for identity dimensions, such as skin color, body shape, and clothing (Salazar, 2009). Each IDE offers different codes for identity construction and performance, including community membership markers such as uniforms (Martey & Consalvo, 2011), and gender and cultural identities (Nakamura, 1995; Yee & Bailenson, 2007). Information communicated by user representations contribute powerfully to the development of norms and group processes, as well as to perceptions of the self, the space, and social others (Markham, 2005). For avatars, social representations can include gender, race, costuming, and body type (Consalvo & Dutton, 2006); the ways that avatar appearances correspond or clash with the particular norms of the immersive environment may serve as

potent markers of how IDE users are perceived as "legitimate" or not. For example, using a default, uncustomized avatar in a virtual world may mark a user as a "noob" – a newbie user (Boostrom, 2008).

Such visual representations provide symbolic frames that help participants "read" a digital culture and more rapidly process the context (Markham, 2005). Avatar features are often leveraged in uncertainty reduction efforts as people try to understand the user "behind" an avatar, such as the degree of anthropomorphism (Nowak, 2004), gender cues (Lee, 2004), and group membership (Martey & Consalvo, 2011). Further, avatar appearance is understood to affect users' own self-perceptions (Yee & Bailenson, 2007). That is, a researcher's avatar design may influence how well that investigator maintains the intended role in the research context, further emphasizing the importance of considering the appearance the researcher adopts in a digital research context. Together, these bodies of literature suggest that the visual features of a researcher-avatar communicate an identity that may affect the conduct of researchers and research participants and, consequently, influence research outcomes.

2.2 Avatar Interactivity

The interactive capabilities of IDEs often include a wide range of options to influence text, movement, and objects on the screen. Generally, interactivity is understood as an exchange between user and machine, or user and user. This notion is distinct from, but related to, considering the computer as a social actor (CASA), as in the work of Nass and colleagues (Nass, Steuer & Tauber, 1994; Ausburn et al., 2009) which posits that individuals' interactions with computers are fundamentally social and evoke people to follow social rules in that interaction. Through this frame, relations with computers (and even computer-mediated content) are subject to dynamics of interpersonal relations (e.g., trust, confiding, leadership, friendship, personality). It is logical, therefore, that when human-to-human interaction takes place on a computer using an avatar as a mediator, people may establish rich social understandings of that digital object. This may be because the avatar – through its interactivity affordances – is perceived as variably anthropomorphic, increasing trust via a sense of homophily (Nowak & Rauh, 2006). When avatars are the central vehicle for interacting with IDEs, meaning is made through cumulative exchanges between user and avatar (Gee, 2005). Importantly, these exchanges are multimodal, with words, images, sounds, and logics that span digital and physical spaces such that the unique agencies of both users and digital agents come together in authentically social interactions (Banks, 2015). Interactivity, then, can be considered a dialectic between user and on-screen content. Because IDEs vary how interactivity is afforded and constrained, we focus here on two interactivity dimensions most likely to be customizable across a range of environments: language used in interactions, and avatar movement through the digital environment.

Avatars and textual communication: User-to-user communication in many digital environments is conveyed as avatar-mediated textual chat – the words typed out by users are associated with the avatar's name, and sometimes with the digital body through speech bubbles or talking/typing gestures. Since interactants in digital spaces draw on the affordances of a given environment to communicate personal and relational information (Walther, 1992), even simple text communication (e.g., paralinguistic cues like exclamation marks, chat slang, emoticons), may convey identities, personalities, or traits. For example, chat abbreviations such as 'lol' or 'pwned' suggest tech-savviness or a gamer identities (Shaw, 2008); use of punctuation suggests properness or education (Rosenthal & McKeown, 2011). Text chat thus can include social cues unintentionally "given-off" (Goffman, 1959) as well as those purposefully performed, such that users' physically embodied or psychological characteristics may be determined by their online chat behaviors, even when using an avatar with different identity characteristics than the user (Martey et al., 2014).

Avatars and movement: Avatar movements are another important type of expressive equipment in IDEs, and are capable of communicating identity, information about the world, and feelings (Tanenbaum, Nixon, & El-Nasr, 2014). Avatar gestures, gaze, and movement function as the same cues in offline interpersonal interactions (Bente, Ruggenberg, Kramer, & Eschenburg, 2008). For example, in IDE interactions, a user-avatar follows the same social norms for gaze and interpersonal distance as in physical contexts (Yee, Bailenson, Urbanek, Chang & Merget, 2007), while avatar movements and gestures can communicate personal characteristics such as age and gender (Martey et al., 2015). More generally, avatar movements have been found to facilitate more natural and coordinated interactions (Moore, Gatham, Ducheneaut, & Nickell, 2007), as avatars' non-verbal cues are especially helpful when both speaker and listener use them (Dodds, Mohler, & Bülthoff, 2011). Movement more broadly has been identified as vital to generating empathic engagement with other people and with non-player characters in IDEs (Bishko, 2011).

3. Designing the Researcher Presence as "NPC"

Overall, users form complex social impressions through various digital modalities, including in textual chat (Markey & Wells, 2002), visual-textual social network profiles (Gosling et al., 2007), and avatar features (Yee & Bailenson, 2007). Importantly, since many cues delivered via avatars may be crafted and scripted, IDEs present opportunities for influences to be mitigated in relation to specific research goals. Designing and performing a researcher presence thus involves establishing a multimodal social presence within specific social, technical, and research constraints.

A guiding conceptual framework for designing a researcher presence must account for both technological and social conditions. For example, the researcher may need to be present in an IDE to perform particular activities (e.g., asking questions), but should not interfere with participants' autonomies and natural behaviors. It is useful, then, to draw on the features and functions of a native digital denizen under the same functional constraints: the video game "non-player character," or "NPC." NPCs are characters in digital games that serve various gameplay purposes such as instruction, resource provision, and storytelling. NPCs are like playable game avatars but are controlled by the game software rather than by a human player; they are created as part of the game environment, and frequently interact with players through systematic logics. In video games, NPCs are key loci of interactivity, and the most effective are those that coordinate seamlessly with the setting, tasks, and goals of the game (Shapiro, Peña, & Hancock, 2006). The parameters of that interactivity – that is, the speech scripts, interface options, and embodied actions – help shape how players engage environments and tasks (Consalvo & Dutton, 2006). Positioning the researcher as NPC capitalizes on people's tendency to treat computers as social actors (Reeves & Nass, 1996; Ausburn, Martens, Dotterer & Calhoun, 2009) and allows even a human-controlled NPC to take on social roles.

NPCs are also key narrative devices that support problem solving, task performance, and cognitive and emotional engagement with the game setting (Freeman, 2004). For example, goblin "banker" NPCs in *World of Warcraft* facilitate the trade of goods and currency, and "Bowser" in Nintendo's *Mario Bros.* franchise serves as a game challenge and antagonist. Strategic design of researcher presence and involvement can have a similar impact when the researcher is re-conceptualized as a character in the "story" of the research, including purposeful aesthetics, speech, and behaviors. The researcher-avatar as a metaphorical NPC, then, embodies a logic for performing according to rules and norms of both the world and the research and accounts for the ways that an avatar can function as a role, a tool, and a prop in online interactions (Linderoth, 2005).

In digital spaces, the researcher presence's modalities, agency, interactivity, and navigability may trigger heuristics that can enhance or reduce levels of perceived realism, control, identity, and social presence (Sundar, Oeldorf-Hirsch, & Garga, 2008), and even contribute to perceptions of credibility (Bishko, 2011; Sundar, 2008). Researchers, broadly, must ask: How can the character a) organically function within the narrative, social, and technological norms of the IDE, and b) serve the logical and functional requirements of the research? Specifically, researchers should attend to the three aforementioned design dimensions (appearance, verbal interactivity, and embodied interactivity) and ask how those dimensions meet organic functioning and research requirements. For example, does the race/species, gender, height, attractiveness, clothing, and expressions convey social identities that align with the environment narratives? Could any visual characteristics convey undue impressions of authority, judgment, or risk? Are the vocabulary and quality of the voice (textual or oral) consistent across interactions, and are they copacetic with the norms of the space or influence research outcomes? Are the avatar's movement and gestures consistent with the environment?

As mentioned, the specific application of this approach will vary depending on the research aims and context. To illustrate how researcher-as-NPC considerations can variably lead to specific parameters for researcher behavior, we offer two case studies that were components of single, larger investigation.

4. Case 1: Unit Nyn in Second Life

To illustrate how conceptualizing the researcher-as-NPC can mitigate the validity risks and contribute to a more cohesive and organic research-design narrative, we offer here a case study: the pilot testing, evaluation, and redesign stages of a study of the relationships between people's offline characteristics and their IDE communication and behavior. For that research, we developed a multi-player game in *Second Life* (SL) and invited groups of 3-5 unfamiliar participants to take an online survey and then play the game (lasting 1-3 hours). The primary goal of the research was to develop and test statistical models by which offline characteristics such as age, gender, and leadership may be predicted by in-game behaviors (see Martey et al., 2014; Martey et al., 2015). There were 220 participants whose ages ranged from 18 to 64, about half were women, and they had an average of 50 hours' experience in SL before participating.

SL is a player-designed virtual world with almost no environmental design provided by its creators, Linden Lab. Instead, users known as "residents" build and decorate "islands" to create bounded digital environments, such as bars and nightclubs, science fiction and fantasy simulations, historical recreations, and private homes. Avatars can be similarly designed as nearly anything imaginable, from glowing balls to enormous dragons, although human avatars that conform to general U.S. standards of beauty (slim, young, with symmetrical features) are most common. These affordances allowed us to tailor the researcher-avatar's body, features, and behaviors in tandem with the digital environment.

The in-world game serving as the research environment was a point-and-click, steampunk-inspired mystery, and was designed to evoke a range of behaviors (e.g., movement, chat, gestures, object-clicking) to examine their potential to predict player characteristics. A researcher-avatar accompanied participants during their play in order to observe interactions, record data, and provide technical assistance. Participant appearance, movement, and chat were logged automatically by game software and subsequently content-analyzed for a range of factors such as speech acts, avatar attractiveness, and proxemics. Here, we draw on session video recordings, post-session surveys, interviews, and field notes to discuss the consequences of the pilot-tested design and the resultant researcher-as-NPC redesign for the main data collection in the research.

4.1 Being Vinny: The Familiar Session Monitor

In early pilot testing, it became evident that a guide was necessary to provide participants with instructions, answer questions, and assist with technical difficulties. We initially designed the guide as a kind of in-game lab monitor who would merely ensure that participants progressed through the game tasks. The monitor needed to facilitate observation, be present-but-inconspicuous during game activities, and provide technical support but remain a non-participant to the greatest degree possible.

Appearance: The appearance and interactions of the first researcher-avatar were based on our own embodied research experiences and drew on notions of homophily which suggest that more human, clearly gendered avatars increase trust and appeal (Nowak & Rauh, 2006). The avatar was named "Vinny" and titled "Training Sergeant," as he provided introductory lessons in game goals and mechanics. Vinny's body was assigned a tall, slim, and youthful human form based on prior research demonstrating this was most common in SL culture (Ducheneaut, Wen, Yee & Wadley, 2009; see Figure 1). He was dressed in steampunk-inspired clothing similar to costumes we made available to participants for the study sessions so that he may blend into the participant groups.

Interactivity: Drawing on standard approaches for lab protocols, we wrote Vinny's scripts in a personable, clear style designed to welcome participants and put them at ease. Vinny's interaction standards allowed him to freely respond to participants, but not to materially interfere with their gameplay unless the group agreed they were hopelessly stalled. We did not script Vinny to role-play, and he did not have a true place in the game's overall story. Vinny moved through the game spaces alongside participants, often standing close by when they were solving puzzles or discussing the plot, in order to facilitate close observation.

Figure 1. Vinny, the initial researcher-avatar for the Second Life research

Vinny's design had unintended consequences. Despite best efforts to keep Vinny (and by extension the different researchers who controlled him) in the background during the research session, pilot study participants regularly treated Vinny more as a group member than a detached lab monitor. As they explored the game zones, many stayed close to him and treated him as the group leader. In Vinny's

presence, players seemed unwilling to solve challenges on their own. For instance, pilot participant C.F. looked to Vinny for nearly everything, frequently asking, "WTF? Now what?" and "Dude, what do we do?" This type of response to Vinny posed a critical risk, as we were specifically evaluating language produced through interaction among players and the implications for expression of leadership characteristics. After experimenting with different scripts, participant interaction rules, and speaking style, we realized that attempting to reduce Vinny's influence by limiting chat was not sufficient. A few attempts at changing his clothes, avatar form, and movement made it clear small adjustments to his style and dress were also unlikely to reduce his influence. Our entire approach to conceptualizing the session guide needed to change – it needed to fit better with the social, cultural, and technological dimensions of the research narrative.

4.2 Being Unit Nyn: Shifting to Researcher-as-NPC

Appearance: Drawing on the heuristic of NPCs as natural denizens of an IDE, we re-designed the guide as "Unit Nyn," who was styled after the automatons scattered throughout the island as a part of the game's steampunk aesthetic. These automatons were literal NPCs – interactive characters with programmed scripts, not controlled by humans. Starting with this less human-sounding name, we attempted to shift the researcher's role from human facilitator to a character in the game's narrative and visual theme. Whereas Vinny was an extension of the *researcher*, Nyn emerged as an extension of the *environment* and the *research* itself in order to satisfy its narrative and research functions. Although Nyn was controlled by a human researcher, linking its appearance, speech, and style to the other automatons encouraged players to *treat* it like an NPC rather than as a group member by minimizing its personhood (see Figure 2).

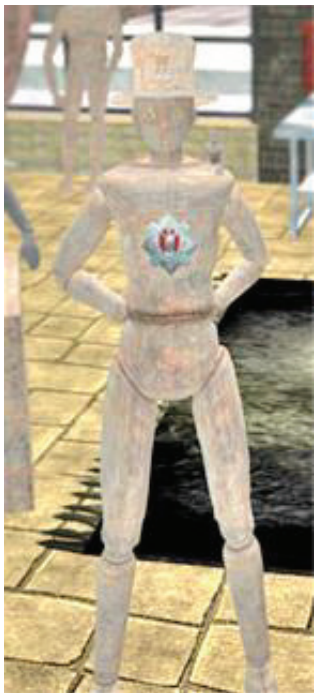

Figure 2. Unit Nyn, the redesigned researcher-avatar for the Second Life research

Although it is possible to create an invisible avatar in SL, we felt that performing information-provision and technical-support functions while invisible would break the flow of the game and make participants feel spied on, and thus uncomfortable. Using an avatar positioned as semantically non-

human, with a metallic, hairless, mechanical body reinforced Nyn's position as a functional tool, as it conjured popular culture images of agentic but service-oriented robots (e.g., C-3PO from *Star Wars*). These visual adjustments also reinforced the avatar's role of Nyn as merely one of dozens of automatons built to serve humans on the island, rather than as any sort of leader or authority figure.

Gender was also an important dimension of Nyn's identity, as digital agent gender is associated with persuasiveness (e.g., Guadagno et al., 2007) which risked interfering with group leadership behaviors. Nyn was created with the intent of removing primary gender markers and, where gender cues were unavoidable, balancing out normative feminine and masculine attributes. For example, Nyn had a somewhat masculine body (that is, it was squared off with no breasts or curved hips) and a top hat, but we used a walk modifier that gave the avatar a more feminine stride, with slightly swaying hips. Although Nyn's intended gender-neutral figure was largely interpreted as male, gender was less salient to participants in Nyn than it had been in Vinny. Post-session interviews revealed that some participants hesitated before assigning Nyn a gender, and others told us they could not decide whether it was male or female.

Interactivity: In order to establish a clear character role for Nyn, we developed careful rules for Nyn's linguistic and embodied interactions. The resulting chat speech was detached, formal, and neutral compared to Vinny's conversational speech (see Table 1), emphasizing its functional role in the steampunk setting. For example, the researcher controlling Nyn never used the self-referent "I" or "me," but instead used the third-person: "this unit." Thus Nyn might say, "This unit will accompany you during your quest." Nyn remained silent unless specifically asked for help, and even then its answers were kept relatively short, formal, and ambiguous to minimize participants' reliance on the avatar as an information source. For example, when players told Nyn what they wanted to name their group, it responded, "Team name registered." This detached style helped maintain relational distance when players tried to engage Nyn more than necessary for the research's goals. Importantly, this detachment was designed and interpreted as a character narrative, not a simple decrease in speech or an unfriendly personality. For example, Nyn said, "Humor registered" rather than laughing in text or refusing to respond at all. This allowed for comfortable exchanges between players and Nyn while maintaining its role as uninvolved observer. Additionally, Nyn wore a badge on its back that, when clicked, would display players' current game points on the screen, reinforcing its position as a tool for gameplay. Overall, the rules for Nyn's player interactions were designed to mimic the systematic logic of a programmed NPC, coordinating with both the narrative position of Nyn as an automaton and the methodological position of researcher-as-NPC.

Table 1. Comparison of Speech between Human Avatar (Vinny) and Robot Avatar (Unit Nyn)

Behavior	Vinny	Unit Nyn
Introductory greeting	Good evening. I am Training Sergeant Vinny in charge of training you to be detectives here with the Adamourne-on-Wells police department. This is not an exercise, rookies, this is a real case.	Greetings. Unit Nyn, Police Unit #6193 with the Adamourne-on-Wells Police Department.
Method of self-reference	Please follow me to the tracking board.	Please follow this Unit to the tracking board.
Affirmative response	"Friday Nighters" it is then!	Team name registered.
Response to jokes	Haha, Sputnik speaks!	Humor registered.

Nyn's movements also needed to unobtrusively communicate the game rules and mechanics within the research and environment narratives. We framed Nyn as an autonomous agent that followed players through the quest, but that did not have the intellectual capacity or programming to lead them. This motivated rules about how Nyn moved and where it stood in relation to players to establish a more tangential *role*. For example, Nyn's body never led other avatars into a new area, but instead trailed behind at a distance and stood outside of group during discussions (Figure 3). To further reduce intrusiveness, Nyn would remain in a neutral, non-central area of each zone so it could be found, but would not actively seek out the players. Overall, conceptualizing Nyn as an NPC in determining how its appearance and interactivity helped us determine what rules researchers should follow in performing as a tool, role, and prop within the research context.

Figure 3. Participants solve a puzzle in SL while Unit Nyn watches from a corner

4.3 Evaluation: Impact of the NPC Revisions

Re-designing the researcher-avatar's appearance and interaction as a metaphorical NPC produced the results we sought: functional unobtrusiveness. Whereas Vinny had been described in post-session interviews as "a nice guy" and "sort of the leader," Nyn was firmly established as a part of the game's setting and narrative. This may be because Nyn evoked less homophily, or preference for beings similar to oneself (see Nowak & Rauh, 2006). Session observation memos noted that that players directly addressed Nyn far less often than they did Vinny, stood farther away from Nyn, and rarely if ever followed Nyn into buildings or quest areas. Other evidence that participants considered Nyn part of the quest setting was revealed in participants' dialogue during research sessions. For example, most players readily identified Nyn (as one participant recalled) as "a robot created by whoever made all those other robots" and explained that it "was just supposed to kind of follow us around but not do anything." One participant referred to Nyn as "Robo-jeeves" and another as "C-3PO."

When one quest group was introduced to Nyn, they listened to its introductory script and then phrased and re-phrased questions as though they were trying to trigger an artificial intelligence to recognize specific terms by saying, "maybe you need to address it as Unit Nyn to get it to answer." One participant expressed confusion over whether Nyn was run by a human or by a software bot,

programmed to respond to keywords as would a search engine algorithm. Another quest group thought Nyn was recording every word of their conversation and then could read it back to them on command. In order avoid breaking Nyn's character, the researcher did not correct this group's misconception. Instead, the researcher scrolled back through the dialog to relay that information as though Nyn had indeed been diligently recording their conversation. Overall, changing the far more human-like Vinny to the NPC-like Unit Nyn reduced the anthropomorphism of the avatar and thus the impact of homophily somewhat. This shifted the presence to function as part of the environment and research narratives rather than emphasizing the researcher as a person interacting with participants.

5. Case 2: Seddrik in World of Warcraft

In digital spaces where there are far fewer options for crafting researcher presence, establishing the researcher-as-NPC can be more challenging. This second case is from a partial replication of our SL investigation, and was conducted in the massively multiplayer online game *World of Warcraft* (WoW). Because WoW environments cannot be manipulated by users, we created an "add-on" that placed information on players' screens to lead them through a multi-player game set in the in-game, non-combat city of Dalaran. The quest was a pirate- and ninja-themed mystery designed to evoke text chat conversation, group cooperation, and problem solving through word puzzles, battles, and information-seeking. We invited groups of 2-4 participants to take an online survey and then play the game (lasting 1-2 hours). There were 375 participants, aged 18-56, all of whom had played WoW for at least 2 years before participating. About half were women, half men. The goal of the second research was to further test and refine the models identified in the SL research, so it was important to replicate the functions of Unit Nyn in a way that made sense in the WoW universe.

WoW is a multiplayer online game in which participants perform quests and fight monsters to advance in levels and power. Players select from a pre-determined set of 10 races and 10 classes (at the time of the research) to create an avatar, which they may customize minimally for such features as hairstyle, face selection, and piercings. Players may use text chat and pre-programmed avatar gestures such as dances, jumps, and waves to communicate in the game. Established in 2005, WoW had about 11 million players at the time of the research.

The limitations in avatar design and gestures posed a significant challenge in addressing some of the key characteristics that were important to Nyn's design – minimizing personhood and minimizing genderedness. Further complicating the process, WoW's game narrative includes two warring factions – the Horde and the Alliance – and game mechanics largely prevent characters from communicating with those outside their own faction. Therefore, we had to design two versions of the researcher-avatar – one for each faction – and these avatars had to be as similar as possible in order to generate consistent experiences across research sessions held for both factions.

5.1 Working with Constraints: Translating Nyn to Seddrik

Building on the lessons learned from designing Unit Nyn in SL, we first identified a clear narrative role for the researcher-avatar that suited the research requirements (again, unobtrusive session monitoring, close observation, and technical support), while remaining consistent with WoW narratives and norms (e.g., lore, language, NPC functions). We then crafted for this avatar – whom we named "Seddrik" – according to standards of appearance, interactivity, and movement for a character that, like Nyn, would be understood by participants as a kind of NPC as a functional but largely a transparent game prop.

Appearance: In selecting Seddrik's appearance, we sought to mirror the unobtrusiveness of Unit Nyn as an NPC by reducing discrete identity cues. The first challenge was selecting an avatar gender. In Second Life we built a body that wove together traditionally masculine and feminine attributes, but creating a non-gendered avatar in WoW is not formally possible, as the game's character creation system requires players to select from pre-designed bodies whose genders are clearly identifiable as binary through largely traditional representations (e.g., facial hair and broad shoulders for males, slim waists and large breasts for females). Within those requirements, we developed researcher-avatars who – although male – were of races whose male character models were somewhat more feminine. As avatar races were faction-specific, the two avatars had to be of two different races yet be relatively equivalent in masculinity/femininity as well as other identity implications that often associated with WoW races (see Monson, 2012).

Different races are associated with distinct visual features (Orcs are tall and muscular with tusks and green skin, and Gnomes are short and generally cute), game narrative and lore (Worgen are humans-turned-werewolves), player stereotypes (Elves are "wimpy," but are also considered the most normatively attractive by players, see Yee & Ducheneaut, 2011), and popular. Conceptualizing the researcher-avatar as an NPC led us to focus on each race's aesthetic and narrative fit, and to select a pair of races that were largely analogous in appearance, equally common in WoW, and that tended to evoke the same stereotypes among players. Initially, we selected the male models for the two more effeminate Elf races – Blood Elves and Night Elves. However, Night Elves change to a "wisp" or floating ball of light when dead, instead of turning into a ghostly version of their usual form. As discussed next, this difference would likely shift players' experience of the researcher-avatar between Horde and Alliance play sessions. Ultimately, we selected a Human for the Alliance and a Blood Elf for the Horde versions of Seddrik, as these are the two most popular races among WoW players (Yee, 2010), and offered similar opportunities for visual feminization and similar ghost forms. Seddrik's class – warlock – was selected pragmatically, as the research design required a character class capable of transporting participants to the city in which the research quests took place. We also designed Seddrik's clothing to fit within the mini-game narrative so he would seem to be part of the quest, rather than an obtrusive element of the research. Using clothing options from WoW, Seddrik was dressed as a pirate with a red headscarf and cuffed and laced white shirt. This also visually aligned the avatar with the participants, as the narrative positioned players as part of a pirate group seeking to overcome ninja-like enemies. In this sense, Seddrik functioned as a prop that reinforced the story the quest was telling.

In reducing the degree to which Seddrik was visually present as a participant in the group, we did not have free reign over the *shape* of the avatar body so we turned instead to considerations of the *space* taken up by the avatar. With few exceptions, WoW avatars take two states: alive and dead. When an avatar is dead, it turns into a ghost – a translucent version of itself that cannot interact with the environment or other players, except for in their party's private chat channel. This translucence makes the avatar less visually substantial, and thus less present in the space (see Figure 4). Seddrik's death and transformation into a ghost was woven into the game narrative (the player-participants witness the "live" Seddrik killed by one of the evildoers they would investigate during the game), and his form signaled to players that he could not help them perform their quest tasks, according game mechanics. His clearly visible limitations helped establish his position as an NPC rather than as an active quest participant.

Figure 4. Live and ghost versions of Seddrik, the researcher avatar in the WoW research

Interactivity: The custom quest incorporated the popular trope of "pirates versus ninjas," with researcher-avatars (including Seddrik and other supporting characters) speaking in stereotypical pirate-styled speech. Seddrik always spoke in this style, peppering statements with "aye" or "arrr" to foster the perception that he was merely a character in the quest. The language required to introduce participants to the research, provide instructions, and explain the tasks they would complete was written to align with the pirate character, using phrases such as, "For this quest, ye'll seek out information in Dalaran to uncover a dangerous plot." As with SL, the research team had considerable freedom to create rules about how Seddrik would verbally interact during the research sessions. For example, in response to a player requesting help with a secret-code task, Seddrik said "Aye, lass, ye may want to eyeball yer notebook fer a clue." When a participant group requested help finding an NPC from whom they needed information, Seddrik suggested according to his limited response script, "Try the innkeeper by the stairs. She be quite the gossip." In this way, Seddrik's language maintained his position as a character in the narrative and environment while allowing him to serve as a tool to facilitate game activities and provide assistance when needed.

Seddrik's movements and gestures were similarly scripted as much as possible while allowing the flexibility needed to follow participants through the quest. Because he was a ghost, according to game rules he was unable to interact directly with in-game objects or people; players knew this limitation to his actions and so generally did not turn to him to help solve quest puzzles. This minimized the need to craft rules around embodied interaction. We established parameters for Seddrik's movements so that he would not seem to lead the group through quest areas. For example, we identified a specific location in each area where Seddrik would stand while participants moved around seeking quest items. Thus Seddrik's role was clearly separated from group members in the tasks they needed to perform, aligning with the game's context and narrative but reducing potential interference with participant choices and behaviors. In terms of movements and gesture to communicate with players, Seddrik was not quite as inhuman as Unit Nyn, but still needed to be reserved to avoid overt participation in decision-making and

group interactions. When the group would gather their avatars to discuss a problem or solve a puzzle, the researcher-avatar was positioned away from the participants. Thus, Seddrik was melded with the environment and research narrative, but was not a main character or primary actor in the process of completing the quest.

5.2 Evaluation: The (un)Importance of Being Seddrik

The parameters established for Seddrik's appearance, language, and movements resulted in a researcher presence that was available for participants but was not involved in their actions. The effectiveness of this design was evidenced in the virtual absence of interactions with the researcher-avatar. There were very few requests from participants to help solve puzzles, even those that were largely chat-based where Seddrik *could* have helped, since ghosts are permitted to communicate through chat. Positioning Seddrik as an NPC meant that players rarely looked to Seddrik to help them find specific locations, and they almost never followed him as he moved around the quest zones. In general, players paid very little attention to where Seddrik was positioned. For example, at one point in the game participants were to follow clues into an area Seddrik cannot enter as a ghost. Without exception, players expressed no concern at all that he was no longer standing near them. It may be that the researcher-as-NPC design was even more successful in WoW than in SL because NPCs are an integral part of WoW as an IDE, whereas they are more uncommon in SL environments. Applying what we had learned in SL to the initial design of Seddrik allowed us to take advantage of the affordances of the WoW environment without violating the limitations we needed to minimize researcher influence over players' processes.

6. Implications and Conclusion

As facilitator, instructor, moderator, or interviewer, a researcher performs as both an engaged actor who is part of the research context and an external observer seeking to understand it (Hastrup & Olwig, 1997), even in experimental contexts when researchers strive to distance themselves from the research process. This article presented the conceptual framework of designing a researcher's IDE presence through the metaphor of researcher-as-NPC, and examining the construction of researcher appearance and interactivity in relation to the research context, narrative, and outcomes. In many games, NPCs are designed as game pieces to contribute to the visual, technical, and social dimensions of play that in spite of being controlled by computers, can take on roles of social actors in digital environments (Ausburn et al., 2009). In the project discussed here, we consider how the researcher presence functioned as a *role* that performs in a social context, a *tool* that provides required functions, and a *prop* that contributes to the research environment (see Linderoth, 2005). We implemented these facets as a human-driven avatar quite literally positioned as an NPC in a video game. Extended to other types of digital spaces, this notion emphasizes the importance of strategically designing the digital presence to fulfill specific research goals by leveraging socio-cultural norms and technological affordances and constraints.

Setting the parameters and design of researcher-participant interaction is always a complex task, and in practice requires considerable improvisation. Without effective and clear parameters, this improvisation can lead to unintended effects that can bias a research's outcomes. Conceptualizing researchers as NPCs can help illuminate the ways that researchers are a part of the research context and narrative, and help identify how to position them on the spectrum from minimally to highly involved with participants. We did not aim to trick participants into thinking the researcher was an actual non-human NPC, although there were some confusions about this in SL (some players speculated that Unit Nyn was a bot since his language was so scripted). However, if required, we could have used this type of misconception to be even less socially present in the research process but retain a valid social role, as

suggested by CASA (Reeves & Nass, 1996). Thus, researchers have the opportunity to establish a carefully designed, multimodal social presence according to the needs of the research. This design can influence how and to what extent people engage with each other and their environment in online settings.

Within the proposed researcher-as-NPC framework, design decisions should draw on research goals and the affordances, constraints, and norms of the digital research site. How can conceptualizing the researcher-as-NPC help in, for example, creating protocols for research in Twitter, YouTube, or community forums? Can such an approach be applied to survey and experimental research? We argue that it certainly can be. Much like designing a brand identity or website personality, the presentation of a researcher presence can have a profound influence on participant responses. For example, in our project, Unit Nyn was designed to be somewhat impersonal, and its appearance and language helped researchers maintain the desired distance from participants. Not only did researchers drive Nyn, Nyn's design also shaped researcher behavior itself (see Yee & Bailenson, 2007), as the avatar, in a sense, took on a 'life of its own' and actually helped researchers maintain a consistent interactive persona and communicative distance.

Online, we can design a body, carefully dress it, script its speech, and choreograph its movement and gestures in ways beyond our abilities to do so in physical spaces. Although, as outlined, considerable research reminds us that identity markers such as gender, age, and race can often be read by others in online settings, our enhanced control over presence online offers the potential to design interaction that incorporates that reading. Considering this design through the lens of researcher-as-NPC can help illuminate the key characteristics and consequences of interaction with participants and potential influence of an authored presence on research outcomes.

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