Swimming with mermaids: Communication and social density in the Second Life merfolk community

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ABSTRACT

While individuals are solicited by a growing number of online networks and virtual communities, human cognitive resources are still limited in terms of the number of fruitful interactions a given individual can sustain. With a high degree of competition for attention, affiliation with the community and communication between its members are central for the survival of virtual communities. A particular virtual community could shed a new light on these phenomena. Indeed, beside the conventional communities based on human-like land-dwelling avatars, a merfolk community spontaneously emerged in the seas of the virtual world of Second Life. The fact that merfolk avatars characteristics strongly restrain their interactions with others and their ability to simultaneously join other communities obviously impacts the structuring and communication within the merfolk community. In order not to become isolated, the members have to develop optimal strategies to keep strong bonds, which in turn reinforce the immersion process. The Second Life merfolk community therefore provides an ideal model to study how members of a virtual community can compensate for ultra-specialization by increasing the quality of the internal communication processes within the community. Furthermore, the observation of the merfolk virtual community demonstrates how optimizing communication, even in a community with a wide repartition and low actual density within the virtual world, can reinforce social density.

1. Introduction

The dramatic advances and democratization of the new technologies of information has made virtual spaces a ubiquitous feature of modern societies. Virtual spaces now represent major spaces of life, in which users can join various virtual communities. This is particularly true for 3D immersive virtual worlds, which can support the expression of individual and group behaviors highly comparable in terms of diversity and complexity to behaviors observed in the real world (Guitton, 2012a, 2012b; Gilbert et al., 2014). For instance, the popular virtual world of Second Life (www.secondlife.com) supports vivid communities gathering large numbers of active members, as varied as the Gorean community (Bardzell & Odom, 2008; Guitton, 2011), the Star Wars Role-Play community (Guitton, 2012a, 2012b), or the steampunk community (Cristofari & Guitton, 2014).

Although the Internet has certainly helped communication and information sharing across distances and cultures, the actual situation is in fact far more complex. While individuals are solicited by a growing number of online networks and virtual communities, human cognitive resources appear to still be limited in terms of the number of fruitful interactions a given individual can sustain (Dunbar, 2012). Thus, with a high degree of competition for attentional resources between communities, the problems of affiliation with the community and of communication between its members are central for the survival of virtual community. In order to maintain more social links at a lesser cognitive cost, one could expect that the optimal way to maintain important social bounds within virtual spaces would be to adopt a virtual identity compatible with the largest possible number of communities.

In this regard, a particular virtual community made of members with avatars whose physical characteristics strongly restrain their ability to join other communities could shed a new light on this question. Indeed, beside the conventional communities based on human-like land-dwelling avatars, the virtual seas of Second Life are also inhabited. While none of the Second Life beginning avatars are amphibious humanoids, a virtual community of merfolk

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(referring to themselves as "mer") spontaneously emerged, taking advantage of almost unlimited possibilities offered by virtual worlds. Half-human, half-fish, mermaids and mermen are recurring inhabitants of both mythological and imaginary worlds. The rise of virtual spaces has offered a new medium to express this fascination, and the vivid merfolk community of Second Life is a testament to this interest.

Due to their very nature as sea-dwelling creatures, merfolks are ultra-specialized avatars, restraining their interactions to underwater or shore environments if staying in character. These particular conditions obviously impact the structuring of the virtual community. In order not to become isolated, the members have to develop strategies to keep strong bonds, which in turn reinforce the immersion process. The Second Life merfolk community therefore provides an ideal model to study how members of a virtual community can compensate for ultra-specialization by increasing the quality of the internal communication processes within the community. Furthermore, the observation of the merfolk virtual community demonstrates how optimizing communication, even in a community with a wide repartition and low actual density within the virtual world, can reinforce social density.

2. Materials and methods

2.1. Virtual anthropological observations

Observational approaches were used in order to proceed to the formal evaluation of the merfolk community and of its environment. Qualitative data related to the interactions taking place in the different settings of the virtual world of Second Life were obtained using the methodologies of virtual anthropology (Bardzell & Odom, 2008; Guitton, 2011, 2012a, 2012b; Hine, 2000; Mann & Stewart, 2000). Data acquisition relied on a strategy combining ethnography of virtual spaces based on observation using "neutral" avatars (Bardzell & Odom, 2008; Ducheneaut, Wen, Yee, & Wadley, 2009; Guitton, 2011, 2012a,b), with a multi-site-based approach (Marcus, 1995). This combination of approaches has been demonstrated to be optimal to provide internal points of view and rich qualitative background for our analyses (Bardzell & Odom, 2008; Ducheneaut et al., 2009; Guitton, 2011, 2012a, 2012b).

2.2. Individual avatars' evaluation

Both male and female merfolk avatars were randomly selected between October 10, 2014 and December 20, 2014. Avatars were only selected when in public places (i.e., regions of Second Life accessible to all adult (18 years or older) users). For each avatar, whole body images were taken. Avatars were only considered if they portrayed adult male or female merfolk. Since more experienced users are likely to have a better control of their appearance due to a larger choice of items in their virtual inventory, only avatars at least 90 days old were selected (Lomanowska & Guitton, 2012).

The distance or proximity of the avatar to a standard human morphology was evaluated. For each avatar, the degree of human conservation was computed as follow. A score of 0 was given as a baseline for a body displayed as a half human (above the waist) half fish (below the waist) chimera. The following modifiers were then applied: +1 for human leg elements in the lower part of the body (below the waist), −1 for a clearly non-human skin, −1 for alterations on the torso (e.g., scales covering the chest for mermaids, spikes for mermen), −1 for alterations on the arms (e.g., fins on the arms), −1 for dorsal fin or scales covering a large part of the back, −1 for facial alterations (e.g., pointy ears or fin ears, fangs,

different pattern of color on the face), −1 for skull alterations (e.g., horns). This simple and objective system was developed in order to insure as much as possible that biases of coding would be extremely limited. Negative values reflected less conservation of human aspect than in a stereotypical half human/half fish standard, while positive value reflected a greater conservation of human characteristics than expected.

Due to the classification of Second Life SIMs into PG, Mature, and Adult categories, nudity is not allowed in every area. A way for female merfolk avatars to overcome this limitation is to wear "modesty scales", i.e., fish scales in the same color of the tail covering their breasts. Since these modesty scales are not necessarily representative of a real distance from a standard human body, but rather a form of technical artefact, a second count was made, without taking into account scales when they were only covering the breasts of female merfolk avatars.

A third analysis was made in order to account for potential biases arising from the possibility of discrepancy between the gender of the real-life users of the observed avatars and the gender of the avatars. Since it is estimated than less than 25% of virtual worlds' users create avatars of the opposite gender (Ducheneaut et al., 2009), a statistical approach can be used to compensate for this putative bias (Lomanowska & Guitton, 2012). This corrective approach provides a conservative assessment of the avatars' physical characteristics unhindered by the gender-bias of the avatar human controller (Lomanowska & Guitton, 2012). Since no *a priori* hypothesis was made regarding the direction of a potential bias, exclusions were made bi-directionally. Therefore, both the 12.5% of avatars with the lowest and the highest indexes of human conformity were excluded for both male and female avatars. The number of avatars in each of the different quantiles of exclusion was rounded up.

Whether the avatars were wearing pieces of clothes or not was noted, as well as the presence of jewelry or other kinds of accessories. Finally, the presence of external signs of potential threat (weapon on display, or external signs of danger such as fangs) was also recorded.

2.3. Intra-community communication: Group notices

In order to evaluate the characteristics of intra-community communication, the four most popular general merfolk groups of Second Life were selected. These groups were defined as those related to the merfolk community without referring to a specific SIM or role-play context, and were identified as the groups with the highest number of members through the Second Life internal search engine using the keywords "merfolk", "mer", "merfolk", and "merman". Out of these four groups, one was discarded as not active due to a very low number of notices sent (only 4 notices sent over the observation period). The three remaining groups were *!!!Safe Waters Foundation!!!* (SWF, with above 1500 members), *Merfolk of SL* (MSL, with above 700), and *Mermaids and mermans of SL* (MMSL, with above 250 members).

The activity of the groups was recorded from October 10, 2014 to December 20, 2014 included (72 days). Every day, the number of new notices was recorded for each group. For each notice, the following parameters were measured: the number of words in the notice, the presence within the main text of the notice of external locator elements ("links", such as Internet address (website), or URL address allowing to directly teleport avatars to a specific location within Second Life), and the presence of an attachment and its nature: landmark (item allowing to directly teleport the avatar to another place in Second Life), notecard (item allowing to store information in a textual format), or picture. When the attachment was a notecard, the size of the Notecard (number of words), and the presence of embedded links was measured. The occurrence