

Tweeting Spacecraft

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ABSTRACT

This position paper for the CHI 2010 workshop on microblogging calls attention to the Tweeting practices of NASA spacecraft, and the tensions arising from such practices with respect to individual and corporate users, agency and intimacy, and expertise and discovery.

Author Keywords

Microblogging; Human-Robot Interaction; intimacy.

INTRODUCTION: THE PHOENIX PHENOMENON

In November 2008, the Mars Phoenix lander watched the sun set over the arctic horizon for the last time. With the Martian winter in full swing, solar power and temperatures reached their expected low, freezing the robot's circuits. As the communications stream from Mars fell silent, a room full of scientists and engineers who had commanded the robot for the duration of its brief mission mourned their loss at their headquarters at the University of Arizona. But once word went out to the Twitterverse on @MarsPhoenix, over forty thousand @users around the world mourned Phoenix's passing, posting tributes, poems and heartfelt condolences online to commemorate the spacecraft, as if it were a dear, distant friend.

In this brief position paper, I will gesture towards three ways in which this phenomenon of Tweeting Spacecraft suggest productive lines of questioning and research, with implications for the study of microblogging more generally. These are: 1) the use of single accounts by 'corporate' entities, 2) how such Tweeting constructs agency and affective relationships with respect to distant robots, 3) the tensions in understandings of 'publishing' and subsequently alloted 'discovery' statements in scientific communities using blogs and microblogs.

CORPORATE TWEETING

Much work on Twitter focuses on single accounts as managed by a single user, who may use their profile and connections to establish their online persona or interact with other single users through the system [i.e. 2,5]. But as some analysts have noted, corporate microblogging is also expanding, wherein entities such as companies, product lines, politicians or celebrities possess and use Twitter accounts to interact (usually one-way) with a wider public [1,4]. Such accounts seem to masquerade as individual users with individual accounts, but are highly controlled by press offices, product managers, or agents.

Tweeting spacecraft fall under the latter category, as a single user account carefully managed by an organization. Anecdotal accounts by Phoenix team members indicate that @MarsPhoenix was originally instigated by a colleague as something of a lark, but as its numbers of followers quickly

grew to over 40,000 fans, NASA Press Offices from Headquarters in Washington to individual centers across the United States took notice. By the end of the mission, all NASA spacecraft possessed active Twitter accounts with thousands of followers. These robots are "tweeted for" by members of various NASA Press Offices located at different NASA centers or affiliated research institutions, much in the way that other corporate entities tweet to their various publics. Despite careful management of robotic identity, spacecraft Twitter feeds usually give the impression of the robots speaking directly to their fans, who maintain the suspension of disbelief as they address the robots as individual agents. Such a situation of electronic production and interchange begs the question of what companies or other groups hope to gain from developing internet accounts and personas for their products or services.

This case brings up several aspects of online identity management in a social network setting which are not yet well understood. For example, do patterns of interaction change when dealing with corporate accounts? How do users manage tweets from their corporate friends as opposed to those from their individual friends? Do the same issues of reciprocity, interlocution and addressivity apply? As in the case of referencing @oprah in a post [2, p. 2], do individual users expect/receive replies from corporate accounts? Interestingly, while the robots infrequently interact with their followers among the general public, they regularly cheer on or ReTweet postings from their fellow spacecraft in other parts of the solar system.

ROBOTIC RELATIONSHIPS

As they are followed by users outside of NASA, such staged interactions give the impression of the robots acting as autonomous agents on the frontiers of space. An implication of this activity is a personification or anthropomorphism of the spacecraft, a transformation of the robot into something -- almost someone -- that can be known intimately by a diverse and dispersed group of people around the world.

On the one hand, this intimacy is invited by the spacecraft as it speaks of its experiences in colloquial terms familiar to internet users the world over, including terms like "yesss!", or "lol". On the other hand, an intimacy between a spacecraft and its followers is invited through seemingly revealing aspects of personal experience. A spacecraft follower can expect to see regular updates from her robot on a regular basis, posted alongside tweets from friends, co-workers or organizations. This invites a sense of the spacecraft as both singular and agential. It also invokes a sense of intimacy in the constant revealing and following

of everyday events in a spacecraft's life. Such intimacy was made evident in the online response to @MarsPhoenix's death, when tributes, haikus and farewell messages were tweeted by followers the world over upon hearing of Phoenix's demise.

This sense of intimacy developed through staged interactions has implications for tweeters as much as for followers. Studies of communication and psychology have documented how revealing intimate details builds a perceived sense of intimacy on behalf of the revealer [3,6], not always the confidant. Such perceived intimacy may contribute to the sense of overwhelming success on behalf of NASA outreach personnel. That a low-budget, short-term and largely immobile mission such as Phoenix could be seen to touch the lives (and live feeds) of thousands presented a public relations breakthrough for NASA, and a viable argument to Congress that public outreach was being sufficiently accomplished. Examining cases like these in more detail may help to reveal exactly what rewards corporate entities hope that Twitter may bring to them. It may also help to understand the development of a sense of robotic agency and personality through other interfaces than directly confronting the hardware itself [7,8].

TWITTER, DISCOVERY AND EXPERTISE

Over the course of Phoenix's short life, microblogging became increasingly central to the daily work of the mission. Microblogging and other Web 2.0 technologies such as Facebook and blogs have been harnessed across NASA's offices to release their spacecrafts' images in near-real time to the public, often with one liner 'blurbs' about the discovery associated with the image. To date, @CassiniSaturn has almost 12,500 followers, while @MarsRovers have 18,000. As Tweets are ReTweeted, TinyUrls clicked, and blog RSS feeds generated, word of the spacecraft's activities spreads quickly.

This drive to generate context for Twitter feeds and blogs has exacerbated a growing tension between NASA officials and the missions' participating scientists. Taking a picture on Cassini or the Mars Rovers takes considerable social and scientific work: to come up with a hypothesis, make a case for that observation such that instrument team members support it, negotiate with other instruments for spacecraft time, bytes and power to take the observation, and craft and code the observation for its radiation to the spacecraft. The images, spectral readings and other measurements that return from the spacecraft are embedded within this delicate sociotechnical process. They are also someone's data, and cannot necessarily easily or intuitively understood by outsiders. Finally, scientists are cautious about stating anything about their data publicly until it has been sufficiently confirmed and subject to peer review. Thus 'releases' of data used to be reserved for scientific publications and major press conferences, wherein a discovery would be appropriately announced -- and credited.

Thus the drive to consistently produce current-events-style scientific snippets causes tension among scientists and their project managers. While one team leader on an

interplanetary mission delighted in the opportunity to have their images viewed by thousands over morning daily coffee, another regularly expresses serious reservations about the kinds of 'discoveries' made and accountings for this data once it was so irresponsibly released to the public. Can significant science be conveyed in 140 characters or less? Does a Tweet count as a publication when it comes to discovery priority disputes? Do claims made by outsiders who click through the TinyURL count as discoveries when the observation was preplanned by a selected scientific team? How to preserve and respect scientific expertise, work and the status of peer reviewed publications in the era of RT@CassiniSaturn? Ultimately, local power conflicts of who has the authority and expertise to speak for the spacecraft - scientists or engineers, PI's or postdocs, NASA offices or independent scientists - are played out over the question of who Tweets for the spacecraft.

CONCLUSION

This brief position paper outlines some of the tensions observed with respect to tweeting spacecraft; the opportunity to discuss them in more detail with a group of microblogging researchers will hopefully lead to fruitful exchange. After all, these issues are not limited to spacecraft, but hopefully present implications for analysis to other microblogging case studies and practices as well.

ACKNOWLEDGMENTS

Thanks to Irina Shklovski and NSF VOSS grant 0838499.

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