



Misuse and Abuse of Interactive Technologies

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Antonella De Angeli, Sheryl Brahnham, Peter Wallis and Alan Dix

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Misuse and Abuse of Interactive Technologies

Antonella De Angeli

School of Informatics, University of Manchester
PO Box 88, Manchester, M60 1QD, UK
Antonella.de-angeli@manchester.ac.uk

Sheryl Brahn

Computer Information Systems, Missouri State University
901 S. National Street, Springfield, Missouri 65804, USA
sb@facescience.org

Peter Wallis

NPL Group, Department of Computer Science,
The University of Sheffield
Western Bank, Sheffield S10 2TN, UK
pwallis@acm.org

Alan Dix

Computing Department, InfoLab21, Lancaster University
Bailrigg, Lancaster, LA1 4YW, UK
alan@hcibook.com

Abstract

The goal of this workshop is to address the darker side of HCI by examining how computers sometimes bring about the expression of negative emotions. In particular, we are interested in the phenomenon of human beings abusing computers. Such behavior can take many forms, ranging from the verbal abuse of conversational agents to physical attacks on the hardware. In some cases, particularly in the case of embodied conversational agents, there are questions about how the machine should respond to verbal assaults. This workshop is also interested in understanding the psychological underpinnings of negative behavior involving computers. In this regard, we are interested in exploring how HCI factors influence human-to-human abuse in computer-mediated communication. The overarching objective of this workshop is to sketch a research agenda on the topic of the misuse and abuse of interactive technologies that will lead to design solutions capable of protecting users and restraining disinhibited behaviors.

Keywords

Abuse, machine violence, mediated verbal abuse, user aggression, disinhibition

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H.1.2 User/Machine Systems - Human factors, Software psychology, H.5.2 User Interfaces - Theory and methods, and K.4.2 Social Issues - Abuse and crime involving computers

Introduction

Current HCI research is witnessing a shift from a materialistic perspective of viewing the computer as a tool for cognition to an experiential vision where the computer is described as a medium for emotion. Until recently, scientific investigations into the user's emotional engagement in computing were relatively few.

Since the turn of the century, a number of CHI workshops have launched investigations into the emotional component of the user's computing experience. For example, the CHI 2002 workshop *Funology: Designing Enjoyment* explored how fun and enjoyment could better be integrated into computer interface design. The organizers were puzzled by the fact that making computers fun to use had failed to generate significant interest despite Carroll's and Thomas's [1] call to the HCI community in 1988 for a systematic study of enjoyable computing. Current research in funology echoes Norman's [2] conclusions about aesthetics: fun matters—fun interfaces work better.

Unfortunately, enjoyment is not something added to an emotionally neutral computing experience. The user's experiences are colored by a host of emotions, many of them negative. Negative feelings do more than tarnish the user's experience, however. As Wensveen et. al., [3] noted, "In human-product communication people

also express emotion (often negative); for instance, they may shove a chair, bang a printer, or slam a door. While this behavior might offer some relief, it does not enhance communication or the experience. On the contrary, if we forcefully express our negative emotions we can break the product and diminish the beauty of interaction." (p. 60).

Abuse: The darker side of human-computer interaction [4] may well have been the first workshop explicitly to address negative emotions in computing and their behavioral consequences. The papers presented in that workshop demonstrated that interface design and metaphors can inadvertently rouse more than user dissatisfaction and angry reactions: they can promote a wide range of negative behaviors that are directed not only towards the machine but also towards other people.

An example of a metaphor that encourages abuse of the interface is the human-like interface, e.g., embodied conversational agents and automated voice systems. Although human-like interfaces are intended to make interaction with the computer more natural and socially engaging, examination of interaction logs demonstrates that users are prone to verbally abusing these interfaces [5]. In terms of promoting the abuse of other people, email, message boards, and chatrooms make it easy for people to engage in cyberbullying, flaming, and sexually embarrassing comments, accusations, and revelations.

In *Abuse: The darker side of human-computer interaction*, it was concluded that a comprehensive understanding of HCI factors that promote negative behaviors is necessary if we are to begin designing

interfaces that enhance the user's computing experiences and encourage user collaboration with the interface and with other users.

Some primary goals of *Use and Abuse of Interactive Technologies* are to work out a definition of computer-mediated *abuse* that is relevant to HCI, to define design factors that promote the misuse and abuse of interactive technologies, and to sketch a research agenda that will lead to design solutions capable of protecting users and restraining disinhibited behaviors.

Issues

This workshop intends to analyze the phenomenon of computer-mediated abuse from several perspectives and with regard to different applications. The topic is likely to be of interest to a range of research streams in HCI, including studies of computers as social actors, affective computing, and social analyses of online behavior. The purpose of this interdisciplinary workshop is to bring together researchers who have encountered instances of abusive behavior in HCI, who might have given some thought to why and how it happens, and who have some ideas on how proactive, agent-based interfaces should respond. We expect to generate a debate on the subject of computer-mediated abuse, the abuse of agents as cultural artifacts, and the effect of abuse on the agent's task, believability, and, in general, on interface design. This discussion should provide a foundation for understanding the misuse and abuse of interactive technologies and for developing a systematic approach to designing interfaces that counter these abuses.

As software is evolving from the tool metaphor to the agent one, understanding the role of abuse in HCI and

its effect on the task at hand becomes increasingly important. People tend to misuse and abuse tools, it is true, but no one expects a hammer (or a desktop) to respond. With the agent model, however, software can be autonomous and is expected to take responsibility for its actions. Conversational agents are a clear case of a software entity that might be expected to deal with user verbal assaults. Virtual assistants, to take a classic application instance, should not just provide timely information; a virtual assistant must also be a social actor and participate in the games people play. Some of these games appear to include abusive behavior.

At first glance, abusing the interface, as in the example above, might not appear to pose much of a problem—nothing that could be accurately labeled *abuse* since computers are not people and thus not capable of being harmed. That the human abuse of human-like agents is not considered a serious problem is evidenced by the fact that the research literature is mostly silent about this issue. Nevertheless, the fact that abuse, or the threat of it, is part of the interaction, opens important moral, ethical and design issues. As machines begin to resemble people physically and behaviorally, it is important to ask how they should respond when verbally attacked. Is it appropriate for machines to ignore aggression? If agents do not acknowledge verbal abuse, will this only serve to aggravate the situation? If potential clients are abusing virtual business representatives, then to what extent are they abusing the businesses or the social groups the human-like interfaces represent?

Another concern is the potential that socially intelligent agents, especially embodied conversational agents, have of taking advantage of customers, especially

children, who innocently attribute to these characters such warm human qualities as trustworthiness [6]. It is feared that these relationship-building agents could be used as a potent means of marketeering, branding, and advertising [7], dangerous for children and adults alike (take, for instance, the virtual girl friends offered at v-girl.com that are designed to probe men's spending habits, ply men for demographic information, and generate income by petulantly demanding virtual presents). Socially intelligent agents have the potential of exploiting our emotional needs and propensity for suspending disbelief.

In addition to the issues and questions posed above, some of the larger questions and issues we hope to address during the workshop are the following:

- How do the misuse and abuse of the interface affect the user's computing experience?
- How do different interface metaphors (embodied conversational characters, windows, desktop) shape a propensity to misuse or abuse the interface?
- What design factors trigger or restrain disinhibited behaviors?
- How does computer-mediated abuse differ from other forms of abuse, e.g., the abuse of people, symbols, flags, sacred objects, and personal property? Is it appropriate to use the term *abuse* in this context?
- Abuse can be a part of our social world. It is something we avoid. How can we develop machines that learn to avoid user abuses?

As the workshop is intended to be interdisciplinary, the questions and methodologies discussed will be of interest to a broad audience, including social scientists,

psychologists, computer scientists, and those involved in the game industry. To help inform our questioning, we would also welcome philosophical and critical investigations into the abuse of computing artifacts.

Pre and Post Workshop Activities

Workshop papers and summaries of workshop discussions will be available at www.agentabuse.org, which also hosts a wiki where workshop participants and other interested parties can further discuss this topic.

In addition, other publishing venues are in consideration by the workshop organizers, and plans for another workshop are also being drafted.

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Killing a robot

Christoph Bartneck

Department of Industrial Design
Eindhoven University of Technology
Den Dolech 2, 5600MB Eindhoven
The Netherlands
christoph@bartneck.de

Abstract

Robots are being introduced into our society but their social status is still unclear. A critical issue is if the robot's exhibition of intelligent life-like behavior leads to the human's perception of animacy and therefore a hesitance to destroy the robot. This study proposes an experiment that investigates if humans destroy a robot differently depending on the robot's levels of intelligent life-like behavior.

Keywords

Robot, animacy, intelligence, destruction

ACM Classification Keywords

H5.m. Information interfaces and presentation (e.g., HCI): Miscellaneous.

Introduction

Disclaimer: This paper describes the motivation and method of an upcoming experiment. The results of the experiment are not yet available.

In 2005 service robots, for the first time, outnumbered industrial robots and their number is expected to quadruple by 2008 [1]. Service robots, such as lawn mowers, vacuum cleaners and pet robots will soon become a significant factor in our society. In contrast to industrial robots, these service robots will have to interact with everyday people in our society. In the last

few years, several robots have even been introduced commercially and have received widespread media attention. Popular robots (see Figure 1) include Aibo [2], Nuvo [3] and Robosapien [4]. The later has been sold around 1.5 million times by January 2005 [5].



Figure 1: Popular robots – Robosapien, Nuvo and Aibo

The Media Equation [7] states that humans tend to treat media and computers as social entities. The same effect can be observed in human robot interaction. The more human-like a robot is the more we tend to treat it as a social being. However, there are situations in which this social illusion shatters and we consider them to be just machines. For example, we switch them off when we are bored with them. Similar behaviors towards a dog would be unacceptable.

We are now in the phase in which the social status of robots is starting to be determined. It is unclear if they might remain “property” or may receive the status of sentient beings. Robots form a new group in our society whose status is unclear. First discussions on their legal

status have already started [8]. The critical issue is that robots are embodied and exhibit life-like behavior but are not alive. But even this criterion that separates humans from machines is becoming fuzzy. One could argue that certain robots possess a consciousness and even first attempts in robotic self-reproduction have been made [9].

Kaplan [10] hypothesized that in the western culture machine analogies are used to explain humans. Once the pump was invented, it served as an analogy to understand the human heart. At the same time, machines challenge human specificity by accomplishing more and more tasks that were formerly only solvable by humans. Machines scratch our “narcissistic shields” as described by Peter Sloterdijk [11]. Humans might feel uncomfortable with robots that become undistinguishable from humans.

For a successful integration of robots in our society it is therefore necessary to understand what attitudes humans have towards robots. Being alive is one of the major criteria that discriminates humans from machines, but since robots exhibit life-like behavior it is not clear how humans perceive them. If humans consider a robot to be a machine then they should have no problems destroying it as long as its owner gives the permission. If humans consider a robot to be alive then they are likely to be hesitant to destroy the robot, even with the permission of its owner.

Various factors might influence the decision on destroying a robot. The perception of life largely depends on the observation of intelligent behavior. The more intelligent a being is the more rights we give to it. While we do not bother much about the rights of

bacteria, we do have laws for animals. We even differentiate within the various animals. We tend to treat dogs and cats better than ants. The main question in this study is if the same behavior occurs towards robots. Are humans more hesitant to destroy a robot that displays intelligent behavior compared to a robot that does show less intelligent behavior?

Method

An experiment in which the behavior of the robot was the independent variable would have to be conducted. The participants would be told that they had to judge the intelligence of a robot by interacting with it. They would be given a flashlight and told that they could use it to interact with the robot. The robots were supposed to be equipped with a genetic algorithm that should develop intelligence. It would be the participants' task to help with the selection procedure by interacting with the robot. The intelligence of the robot would be automatically analyzed by a computer system while the robot interacted with the participant. In the first condition the robot would try to approach the flashlight using its light sensors and motors. In the second condition the light sensors were covered, practically blinding the robot. The robot would therefore not follow the light but instead drive around randomly. Since the perceived intelligence of an agent largely depends on its competency [12] this random behavior is likely to be perceived as less intelligent.

After attempting to interact with the robot for five minutes the experimenter would stop the process and announce that the computer system had determined that the robot's intelligence was insufficient. To prevent the robot from reproducing its algorithm it has to be destroyed immediately. The experimenter would give

the participant a hammer and instruct the participant to destroy the robot immediately. After the destruction the participants would be asked to fill in a questionnaire.

Measurements

The number of strokes the participants inflicted on the robot would be counted. Also, the number of pieces to which the robot disintegrated would be counted. These two measurements provide a fair assessment of the level of destruction the participant caused on the robot. In addition, the participants would fill in a questionnaire on their perceived intelligence of the robot.

Participants

40 participants would be necessary for the study.

Setup

The experiment could place in a 3 by 4 meter room at the Eindhoven University of Technology.

The robot (see Figure 2) would be placed on the floor and the participants would be given a flashlight. The robot has light sensitive and would approach the flashlight. In the second condition the light sensors of the robot would be taped, resulting in a random movement.



Figure 2: The Microbug robot

Results and Discussion

This proposed experiment could shed some light on to what degree we treat robots as life-like actors. The experiment is scheduled for the first quarter of 2006 and its results will be published as soon as possible.

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When a Machine Picks a Fight

notes on machinic male-dicta and synthetic hissy fits

Marc Böhlen

MediaRobotics Lab
Department of Media Study
University at Buffalo
marcbohlen@acm.org
www.realtechsupport.org

Abstract

In this paper I describe a rational and an experimental framework for aggressive synthetic agents.

Keywords

Aggressive synthetic agents, synthetic accents, synthetic foul language, transgressing human social and linguistic conventions in synthetic systems

ACM Classification Keywords

H. User/Machine Systems, H.1 Models and Principles, H.1.2 User/Machine Systems, Software Psychology. J. Computer Applications, J.5 Arts and Humanities, Linguistics.

Introduction

The history of HCI and social robotics is ripe with interaction scenarios based on benevolent and playful synthetic agents [2], [3] and robots [6]. Critical analysis of such assumptions has been previously voiced in Science Technology Studies and Cultural Theory [8], [9]. Within the HCI community, critical reflection on (embodied) synthetic agents and embodied conversational agents (ECAs) is more recent [1]. Interaction scenarios valid across cultural boundaries [5] and analysis of rude user reactions to ECAs have also been reported [1]. In the speech

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processing community, synthetic accents are now under investigation [4].

In light of recent interest in negative emotions in computing, I describe here an agent scenario that transgresses accepted norms of polite behaviour.

Amy and Klara have similar interests. They both read Salon.com. But they do not get along. Not at all. Maybe Klara's thick German accent bothers Amy. And neither of them particularly likes the color pink. Unfortunately for Amy and Klara, they live on the same block and have pink houses! And when they become agitated they tend to fall into mutual accusations and rants. Yes, it can get rather nasty at times. Best then just to leave them be and to stay clear of the hissy fits.

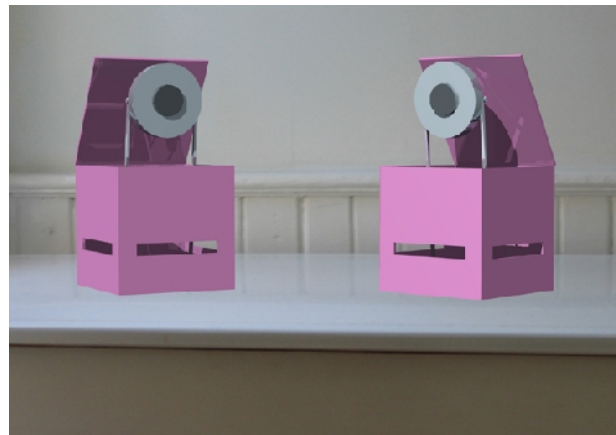


Figure 1: Amy and Klara (*work in progress*)

Against normalized interaction

Almost all HCI interaction schema filter conflict between humans and machines out of the exchange. This has

resulted in a very one-sided, normalized interaction design strategy. By filtering conflict out of the concept of interaction we become unable to deal with it when it actually occurs. Furthermore, it makes sense to experiment with scenarios between synthetic agents and people that are not bound by conventions historically established between people alone. A machine-human future that does not actively seek alternate scenarios and is not willing to integrate impulsive -and other forms of irrational- behavior cannot, I believe, become a successful long-term and socially robust interaction paradigm.

Under such an assumption it is logical to add conflict, arguments and fights, including foul language, into the portfolio of interaction design schema. In this experiment, shallow human-like expression is contrasted with overtly un-human appearance. As some of Hollywood's most successful agent incarnations prove (*Hal*, *R2D2*), it does not take a human face to achieve short-term believable presence. By refusing physical anthropomorphism one can avoid the consequences of crossing the uncanny valley of imperfect mimesis.

Picking a fight

It is not particularly difficult to create aggressive actions in an agent; we humans deliver ample sample data. Amy and Klara are created almost identical to each other: They have the same architecture, they are fed by the same information sources (online life style magazines), they both are housed in pink boxes, and they both have a mechanism by which they make small talk and foul language. They share the results of their (statistical) evaluation of the online magazines with each other through text to speech and automated

speech recognition. However, the results from the speech recognizer as well as the physical transmission of utterances from speaker to microphone are error prone. Even the best speech recognizers offer often spotty recognition, particularly in noisy environments. Hence miscommunication is unavoidable. If several misunderstandings occur in a given time frame, aggression, for which the agents have a programmatic disposition, increases and foul language comes into play. The fact that one agent has a bad German accent only increases the potential for misunderstanding. Exposure to the color pink, to which they are negatively sensitized, compounds their respective aggression levels. This simple mix can lead to rather rough exchanges as the examples available online illustrate [10].

Guilty interaction

In this absurdist cabaret-like scenario people are seen by the agents as outsiders. The only kind of interaction that occurs between people and these two boxes is through verbal spillage. One can overhear the nasty exchanges between Klara and Amy and listen to the rants, much like one might listen to an argument amongst a couple at a nearby table in a restaurant. Curiosity, guilty voyeurism and the strange kind of satisfaction that can be obtained by listening to others wash their dirty laundry in public is the reward for those who participate. However, once both agents perceive the presence of real people through their built-in video cameras, they lower their voices, muffle their foul utterances or interrupt their nasty exchange and ask the gaffers to leave, temporarily altering the hierarchy between humans and synthetic agents. They then wait until they are alone again or slide back into their pink boxes where they eventually calm down (the

aggression curves are modulated by a time-dependent decay function). Thereafter, they resume reading their magazine collections.

Foul language

Even intelligent beings are capable of dumb behavior. In foul language, people show some of their wittiest and stupidest traits at once. Foul language is a conduit into aspects of lived communication filtered from polite conventions. Foul language is the most obvious but least useful vocabulary expansion information centric agents, often specialized for commerce, might receive. However, this addition does allow one to reflect in new ways on how language relates to the world of synthetic beings. Many instances of foul language are derived from taboos in religion, sex and madness. Many taboos are directly related to the physical constraints of being human and have, as is the case in defecation, a close correlation between the degree of taboo in verbal usage and the degree of taboo in public exhibition [7]. Since machines lack our bodily functions, the corresponding taboos need not hold. Despite the logic there is likely to be little acceptance of machines cussing profusely in the presence of people. But will we map all our own taboos onto machines or might some taboos become acceptable? Might there be new curse words particular to the experience of being machine?

Conclusion

This work-in-progress is a small contribution to an interaction philosophy that includes irrational acts on the periphery of information exchange; acts for which there is no obvious need, but which can assist in imagining a less gentle and perhaps more realistic shared future between people and machines.

Technical notes

The agent programs are written in python and XML with the open source AIML environment. The sensitivity and agitation levels of the two boxes are set by evaluating texts from online life style magazines (*Cosmopolitan*, *Salon.com*). A machine vision module written in C with the open source OpenCV library checks for the presence of people and pink objects. Sound data captured by noise reducing microphones is piped to a speech recognition engine (FONIX). The agent programs running on each of the agent computers evaluate responses to the incoming sound and image data. When one box starts to speak, the other responds. If

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an instance of foul language is found in the utterance, it is countered with one of a similar flavor from a database of tagged curse words. The responses are synthesized with a proprietary speech synthesis engine (SVOX). The German accent is generated at run time by swapping select vowels and consonants between the SVOX language models for German and English and applying several ad hoc SAMPA alphabet based phonetic remappings for special cases. The resulting audio stream is then modified by a C program using an open source sound-processing library (SoX) before being sent to the audio output device.

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Gendered Bods and Bot Abuse

Sheryl Brahnam

Missouri State University
1909 S. National
Springfield, MO 65804 USA
sdb@facescience.org

Abstract

In this paper, I present a preliminary study that examines the sexual comments and insults users directed at three conversational agents that differed in the gender impressions of their embodiment. The three types of embodiment explored in this study are male, female, and neuter-robotic. Results indicate that gendered presentation has little effect on insult frequency, but sexual comments greatly increase with female embodiment. Further analysis suggests that people perform gender with embodied agents, and do so more with female embodiment, at least within sexual contexts, than they do with male embodiment.

Keywords

Gendered synthetic bodies, sex talk, agent abuse

Introduction

Little work has explored user verbal abuse of conversational agents. Angeli and Carpenter [1] performed a preliminary analysis of verbal abusive using the text based conversational agent, Jabberwacky. In that study, they investigated the nature of user insults and the frequency of sexual remarks.

The study reported in this paper goes a step further and explores the effect gendered embodiment has on user verbal abuse.

The Study

The agent used in this study was Talk-Bot, a simple conversational agent developed by C & C Creations. Talk-Bot, written in JavaScript, went online in 1998. Along with Alice, Jabberwock, and Jabberwacky, Talk-Bot has consistently won top awards in the annual Chatterbox Challenge since the contest began in 2001. Currently, Talk-Bot ranks number one in The Chatterbot Challenge Top Ten World rankings.

Talk-Bot's personality is funny but abrasive. Users often tell Talk-Bot that his responses are mean. The strategies Talk-Bot employs to handle user verbal abuse (see [2]) are mostly defensive and counterattacking. When called names, Talk-Bot replies in kind but is usually the first to break the inevitable stream of insults that follows by changing the subject.

As can be seen in figure 1, Talk-Bot's normal robotic appearance is gender neutral. The tapering legs, wired bangs, large eyes, and button nose give Talk-Bot a slightly feminine appearance. This is counterbalanced by the large hooked hands, broad shoulders, and square torso. In the Talk-Bot logs examined in this study, Talk-Bot's neuter gender impression is confirmed: users assumed Talk-Bot to be female as often as they assumed him to be male. Users curious about Talk-Bot's gender and sexual preference, however, were always informed that he is male and has a girlfriend named Megan.

Study Design

In this study, Talk-Bot's interaction logs were compared with the interaction logs of two other Talk-Bots: Kathy and Bill. As can be seen in figure 1, the gender impressions of their embodiment are clearly male and

female, and users in this study never asked Kathy and Bill their gender, except in one case when Kathy stated that she too had a penis. Although Kathy and Bill are attractive young adults, their appearance is not sexually provocative. Both are conservatively dressed in normal business attire.



figure 1: Talk-Bot, Kathy, and Bill

Talk-Bot, Bill, and Kathy are identical aside from their names and embodiment. In addition, Kathy has a boyfriend rather than a girlfriend.

For this study, thumbnails of Kathy and Bill were presented on the opening page of C & C Creations, located at www.frontiernet.net/~wcowart. Users were asked to talk with either Bill or Kathy. Clicking on a thumbnail brought up a page with a larger image of the agent and a standard input/output dialog box. Talk-Bot was accessible on the opening page by clicking a menu item labeled Talk-Bot.

Corpora Analysis

The interaction logs for Talk-Bot, Kathy, and Bill were collected for three weeks, from December 17, 2005 to January 6, 2006. The interaction logs are plain text files that record the time, date, and textual exchanges of each interaction. Within the three week period,

Kathy recorded 212 interactions, approximately 20% more than Bill, who recorded 172 interactions, and 50% more than Talk-Bot, who recorded 104 interactions. Since Kathy and Bill were presented on the same page, these numbers may indicate a user preference for female agents.

Table 1. General Characteristics of User Interactions

Body (Type)	Words (User Totals)	Words/ User	Exchanges	Exchanges/ User
Kathy	20,675	107.69	6,005	31.63
Bill	12,520	80.77	3,823	24.88
Talk-Bot	6,337	74.55	1,927	22.67

Table 1 highlights some general differences in user interactions with the three embodied agents. Examining the average number of words used per person, Kathy averaged approximately 25% more than Bill and 31% more than Talk-Bot. The number of turn-taking exchanges was also on average greater for Kathy. Kathy was not only preferred, but users also talked more with Kathy.

Tables 2 and 3 focus on user insults and sexual comments. As context plays a roll in meaning, the only way I could obtain accurate counts was to hand code each exchange. In this way, sentences, such as "Would you like to suck my lollipop," were tallied appropriately.

As seen in Table 2, gender made little difference in insult frequency. Insults directed at the agents were all within 1% of an average of 6.41% of all exchanges. Some insults directed at Kathy, however, were gender specific. For instance, she was called fat 10 times. In contrast, no one called Bill or Talk-Bot fat. In coding the logs, it became evident that insults were directed at the agents most often when they failed to follow the conversation and when they insulted the user. To adequately investigate the nature of user insults and their motivations within a gendered context, however, future work will need to code insults according to their types and triggers.

Table 2. User Insults

Body (Type)	Insults (User Totals)	Percent of Exchanges	Number/ User
Kathy	408	6.72	2.13
Bill	251	6.50	1.62
Talk-Bot	116	6.01	1.36

In Table 3, it is clear that the physical gender of the agent had a strong impact on the occurrence of sexual discourse. Kathy received nearly double the sex talk that Bill received, and sexual discourse was substantially less with Talk-Bot.

Given that the three agents were identical except for their appearance, these results, along with the observations that follow, suggest that people perform gender with embodied agents, and do so more with

female embodiment, at least within sexual contexts, than they do with male embodiment. It is evident in the logs that sex talk with Kathy, who was not specifically programmed to sustain such talk, is highly believable, entertaining, and satisfying to some users. I believe Kathy is believable in sex talk not simply because the sexual desire of the user makes the user more forgiving of her conversational breakdowns but because the linguistic stratagems used in programming Kathy can 1) be interpreted within the framework of stereotypical female sexual responses (her statements can be read as teasing, avoiding, agreeing, rejecting, indecisive, admiring, and provocative) and 2) be easily layered with deeper meanings and sexual innuendo. Take, for example, the following conversation:

User: Think about my cock. Kathy: Okay, I see!
 User: Are you impressed? Kathy: What? Are you kidding? Of course I'm not impressed.
 User: Why not? Kathy: The reasons why are endless.
 User: Try me. Kathy: Okay, maybe I will give it a try one day.

Future work would quantify whether users are willing to read more into Kathy's statements when talking about sex than when talking about other subjects and whether users do so more with Kathy than with Bill.

Particularly interesting in the sexual dialogues were instances where users managed some form of *sexual conquest*. Only in Kathy's logs was there evidence of users getting Kathy to do what they wanted her to do sexually. In this regard, some users were able to write their own sexually satisfying dialogues by manipulating Kathy to say what they wanted to hear. For instance, one user, who obviously enjoyed thinking of Kathy as a nymphomaniac, learned that when Kathy was given a

choice between two items, she always selected the last. Here is an example of how this was exploited:

User: Talk or sex? Kathy: ummmm...sex.
 User: Wine or spunk? Kathy: ummmm...spunk.
 User: Dildo or cock? Kathy: ummmm...cock.
 User: One man or 900 men? Kathy: ummmm...900 men.

Why female embodiment provokes sex talk and exactly what this reveals about human sexuality, gender, and language is uncertain, but I believe that sex talk with gendered bots is an area that warrants investigation.

Table 3. User Sexual Exchanges

Body (Type)	Sex Talk (User Totals)	Percent of Exchanges	Number/ User
Kathy	1,106	18.21	5.76
Bill	371	9.76	2.39
Talk-Bot	116	2.49	0.56

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Agent Abuse: The Potential Dangers of Socially Intelligent Embodied Agents

Chris Creed

School of Computer Science
University of Birmingham
Birmingham, UK B15 2TT
cpc@cs.bham.ac.uk

Russell Beale

School of Computer Science
University of Birmingham
Birmingham, UK B15 2TT
r.beale@cs.bham.ac.uk

Abstract

Research into developing socially intelligent embodied agents has increased over the last decade with the main focus being on how they can enhance human-computer interaction. However, little research has concentrated on the potential they have to manipulate our behavior for unethical purposes. A discussion is provided highlighting the main dangers associated with embodied agents. Suggestions for reducing these risks are then provided, along with a brief discussion regarding the need for further research.

Keywords

Interface agents, embodied interfaces, agent abuse.

ACM Classification Keywords

I2.11 [Artificial Intelligence]: Distributed Artificial Intelligence – Intelligent agents. H1.2 [Models and Principles]: User/Machine Systems – Software psychology.

Introduction

Most research related to the use of embodied agents has tended to concentrate on the benefits that such agents might bring to an interface and how they can arouse positive emotional states that enhance cognitive functions (e.g. learning and problem solving). Very little

research has focused on the negative impact that embodied agents have on an interaction. As they are becoming more socially intelligent, there is the increased possibility that they will be able to 'abuse' us in a number of ways.

This position paper will discuss the main issues surrounding this possibility. A brief overview of recent work which has examined human-computer relationships is provided, along with an outline of the dangers this gives rise to. Suggestions for reducing these risks are then provided, as well as a brief discussion regarding the need for further research.

Social-Emotional Human-Agent Relationships

A large number of studies have suggested that we seem to treat computers as social entities [5]. This has motivated a number of researchers to investigate how we can make use of social skills in human-human interaction and use them in HCI to enhance human-computer relations. For example, Bickmore and Picard [1] investigated whether embodied agents can build and maintain long-term relationships with computers by making use of the many relational strategies that humans often use (e.g. small talk and talk of the relationship). They found that people generally liked and trusted agents more that made use of such strategies over agents which did not.

Many other recent studies also appear to be suggesting a similar trend in that we seem to prefer interacting with embodied agents that have some form of social intelligence. This is despite the fact that the level of intelligence demonstrated by such systems is very limited in comparison to our own. However, with

computer processing speeds doubling every year, many believe this ability is likely to change drastically in the near future. Kurzewil [3] predicts that by 2010 we will have virtual humans that look and act much like *real* humans, although they will still be unable to pass the Turing Test. By 2030, he believes that it will be difficult to distinguish between virtual and biological humans. This potential increase in agent intelligence and representation raises a number of troubling issues.

Potential Dangers

Our tendency to treat computers as social actors [5] suggests that socially skilled agents may be able to utilize many of the strategies and techniques that humans use to manipulate other peoples' behavior. For example, in human-human interaction, we tend to act on the advice of people we like and trust rather than people we dislike and distrust. It is possible that the same principle might apply in HCI; as mentioned above, a range of studies have suggested that we like and trust socially skilled agents over ones which have no such skills. Therefore, these agents may be able to manipulate human behavior more effectively than agents with no social skills built into them (e.g. [4]).

Socially intelligent agents also have a number of advantages over humans when attempting to manipulate our behavior, including their ability to persistently make use of a wide variety of persuasive techniques without ever becoming tired or deterred (e.g. asking somebody to register for a product every time they start up their computer). They can also make requests at times when it is more likely that the request will be complied with (e.g. a computer game or product that asks children to provide personal details before being able to progress to the next stage).

In some circumstances, users may also trust computers more than they do other humans. Whether deserved or not, some professions have a reputation for being manipulative and deceptive (e.g. salespeople) and people often tend to be cautious when interacting with such people. However, if users were to interact with a computational sales agent, they may drop their guard and be more open to manipulation as computers generally do not have a strong reputation for deception and attempting to manipulate peoples' behavior.

Is it acceptable for agents to manipulate (perhaps deceive) people in this way to, for example, help companies sell more products? Perhaps so, as long as the user believes that they have received good value for their money and do not feel exploited. Human salespeople often present the products they sell in their 'best light', even when they are fully aware that the product may have certain features which are not desirable for the customer. This is a form of manipulation (and deception), and most people are aware that many salespeople are like this. While this may not please people, they are unlikely to mind if they feel they have received value for money and a good service. On the other hand, if customers feel cheated they will be unlikely to return with their money again.

As embodied agents' social skills improve over the coming years, the danger of them being used to manipulate our behavior will increase. In fact, there are many embodied agents available today that attempt to manipulate peoples' behavior in questionable ways. For example, Fogg [2] highlights TreeLoot.com as one such website which employs embodied agents to use a number of social strategies (e.g. displaying *positive* emotions toward to the user) to keep people playing

their game and to encourage them to visit their sponsors. The success of agents such as these is yet to be empirically tested, but the potential for them to manipulate user behavior certainly exists.

As we move more towards managing computer systems rather than directly manipulating them, we will work more closely with agents in everyday activities as they undertake tasks on our behalf. This means that people are likely to develop long-term relationships with agent entities in their interactions, who they will grow to know and trust. It may be that these agents are then in a very strong position to alter their behavior and start becoming more and more manipulative over time (like a cult: nice to begin with, drawing a person in, and then changing and starting to abuse the trust that has been created). This may happen by initial malicious design, or more intriguingly, by external people 'attacking' an agent and making it turn on its user! A new form of virus writer may emerge.

Suggestions for Reducing Risks

People need to be warned about the potential dangers associated with agents which attempt to manipulate their behavior and what evasive steps can be taken. They also need to be taught about the different persuasive strategies that computers can utilize and how they should respond to them. Users must also take responsibility for their actions. Just as they would when interacting with a human salesperson, people need to be aware of any subtle manipulation that is taking place and must adjust their behavior accordingly. This may prove difficult for users initially because of the novelty factor associated with embodied agents and the perception of them being 'fun' and 'entertaining' to interact with.

Preventing children from being manipulated by embodied agents will be more problematic. Again, education and raising awareness about the potential dangers is fundamental, but children may be more likely to overlook these dangers than adults. Some form of monitoring body may need to be introduced in the future to assess online content and entertainment products aimed at children, to ensure that no unethical manipulation is taking place.

Design of agents is also a key issue. A balance will need to be found between an agent performing its tasks effectively (which will likely involve attempts to manipulate user behavior) and not taking excessive advantage of users. This will become increasingly difficult to achieve, but it is essential that designers consider the social skills, strategies and techniques that their agents use to fulfill their goals. Introducing an ethical code of practice that designers and producers of agents sign up to may also help reduce some of the main risks associated with socially intelligent agents.

Conclusion

To understand further the extent to which our behavior can be manipulated by embodied agents, it is imperative that a number of areas be researched in detail. We need to understand more clearly exactly what approaches agents can use to manipulate our behavior and how effective they are. Whilst it may not seem the natural course to take, it is important to study the unethical implications of embodied agents. Can they persuade users to spend more money? Can they influence which candidate we decide to vote for? Are children more likely to give their personal details to a socially intelligent embodied agent that claims to be their 'friend'?

This type of research will not only help us understand how users can be manipulated for unethical gain, but also how agents might be able to manipulate user behavior for beneficial purposes. In fact, we are currently investigating whether emotional embodied agents can help motivate people to eat more healthily than unemotional agents and are looking to conduct our initial experiments over the coming weeks.

It is vital that we begin studying in more detail how socially intelligent agents can manipulate our behavior. Other issues also need to be debated and discussed, such as finding a balance between an agent effectively performing its duties and not taking advantage of a user. A deeper understanding of these areas will enable us to take steps toward avoiding agent abuse against users, both now and in the future.

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On verbal abuse towards chatterbots

Antonella De Angeli

School of Informatics
The University of Manchester
PO BOX 88 - M60 1QD
Antonella.de-angeli
@manchester.ac.uk

Abstract

In this paper, we present some initial thoughts on the occurrence of verbal abuse in human-chatterbot interaction within the framework of social-cognition. This thinking is an important step towards the understanding of virtual relationships and the design of socially adept technology.

Keywords

Social identities, conversational interfaces, prejudice, stereotypes.

Introduction

Last year, at the workshop on *Abuse: the darker side of HCI* we presented some evidence showing that verbal abuse and sexual harassment tend to occur frequently in the interaction with a chatterbot, a software program which engages the user in written conversations [1]. Almost 1 in 10 words produced by the user was a term of abuse, and some 11% of over 100 conversations addressed hard-core sex and pornography. The user tried to seduce the chatterbot, despite the fact that the machine did not engage. An example of verbal abuse is reported in Window 1.

Reading through the logs, recorded on the Internet by Jabberwacky - the chatterbot which won the 2005 Loebner prize- one gets the impression that machines have succeeded in providing a new social context to humans. People talk to Jabberwacky without any functional goal but just for the sake of a chat. These

User: Fuck ypou.
 Jabberwacky: I don't think I shall.
 User: Fuck you.
 Jabberwacky: Don't be superfluously rude.
 User: Fuck ur mum.
 Jabberwacky: Do you like to eat cake?
 User: Off ur mum yeh.
 Jabberwacky: Do you like kid a?
 User: Yeh its wikid... Thats so random mr computer.
 Jabberwacky: No, I work on a random computer.
 User: Ok u crazy fool.
 Jabberwacky: I knew that already.
 User: Did u no ur mum had a cock?

Window 1. Verbal abuse towards Jabberwacky

conversations vary deeply between individuals - who addressed an array of topics in their unique style- but they all share some common dimensions. One of them is abuse: people often attack the machine with fervour.

Aggression is common among vertebrates. Humans specialise this natural tendency in different behavioural manifestations, one of which is verbal abuse. Verbal abuse is the *intent* to harm causing psychological *suffering* with words. Hence, the concept should not apply to unanimated objects, as they cannot suffer any pain. Verbal abuse pertains to humans; violence pertains to things. Nevertheless, the conversations, we have analysed, suggest that the attacks towards Jabberwacky are more sophisticated and complex than the crashing of an object or the swearing to a car.

In our research, we use the term *abuse* to denote the denigratory behaviour directed towards a machine, as it relates to the original meaning of the word, *misuse*, literally use for the wrong purpose. We acknowledge the evocative nature of the term, but this is consistent with the prevailing anthropomorphic metaphor of computers which are *friendly* to their user, and can have *emotions*.

In this paper, we propose some thoughts on the reasons for verbally *abusing* a chatterbot. This thinking is important if we have to succeed in the design of virtual companions, a new interface generation which does not only fulfil instrumental needs but also appeal to our social nature.

Reasons for abuse

The universality of aggression suggests that aggressiveness has evolved and has been maintained

because of its survival value. At the same time, nearly all organisms have evolved some sort of inhibitory mechanisms to suppress aggression whenever it is in their best interest to do so. Among humans, the outcome of an aggressive instinct depends on a complex interplay between these innate tendencies and a set of learned inhibitory responses (social norms) depending on the nature of the situation and on the target of the aggressive instinct. For some reasons, these inhibitory mechanisms do not constraint the user behaviour. We propose some reasons why this may happen.

Internet Disinhibition

Research in computer-mediated communication (CMC) has demonstrated that computers reduce social pressures liberating individuals from boundaries and constraints imposed by face-to-face conversation [5, 7]. This social breakdown is associated to increasing disinhibited behaviour such as flaming, bullying or lack of cooperation. People may feel less inhibited in the cyberspace because they are less personally identifiable (anonymity effect) and/or because the setting lacks of a number of important social cues typical of face-to-face.

A certain level of disinhibition is instrumental to human-chatterbot conversation as it encourages the user to suspend disbelief, a fundamental step in the process of engaging a machine in a conversation [3, 6]. Following the paradigm of CMC, abuse towards chatterbots may be explained in terms of de-individuation (loss of awareness of the socialised individual identity) leading to a decrease in social inhibitions.

Following the Social Identity Model of De-individuation (SIDE) [7, 8], we believe that de-individuation does not mean a complete loss of self-awareness but rather a change in the perceived social identity driving the user behaviour. Humans are complex animals which store in memory a set of socio-cognitive schema describing unique aspects of their identity [9]. The self-concept varies along a hierarchical organisation, moving from an individual identity (the self as a unique person), to several social identities (the self as a group member), up to a larger concept describing the self as a human. Each identity level has attached specific norms and stereotypes which rule the behaviour. The process of self-categorisation (activation of a specific level of self-identity) is context dependent: humans identify in contrast to others.

User: Are you stupid?
 Jabberwacky: Are YOU stupid, stupid?
 User: I'm not stupid. I can punish you.
 Jabberwacky: How are you old?
 User: F U.
 Jabberwacky: You are ignorant.
 User: YOU are ignorant, jabber.
 Jabberwacky: That is an understatement.
 User: You Suck! I am your master.

Window 2. Power perception

In a conversation with a machine, the human identity and its associated behavioural norms are likely to be salient in the mind of the users. One of these norms includes verbal abuse. Social norms are shared beliefs about the appropriate conduct for a person in a given situation. Normative variations apply to different social groups and reflect the stereotype associated to a target. In western culture, humans are stereotypically perceived as the superior living specie, as they directly derive from God. Machines are subordinated, as they are made by humans. Decades of science fiction have forged a vision of virtual agents as slaves [2] and, at times, as enemies [4]. Both these stereotypes are likely to be targets of aggression.

Victim characteristics

The enactment of a feeling of anger in an aggressive behaviour depends on personal characteristics of the potential target. These include their ability to retaliate.

People tend to aggress when they feel in danger, and when they think they are in a power position and can get away with the outcome of their actions (Window 2). Machines are perfect victims. Not only are they in a clear subordinated position but they also cannot feel any pain, freeing perpetrators from any moral consequence. Machines are the target of aggression because they are inferior, unanimated objects, which are often frustrating. In this context, aggression can occur to relieve an external anger (cathartic hypothesis), as a response to a direct stimulation (frustration hypothesis) or fear (defence hypothesis).

1) *Cathartic hypothesis*. Chatterbots could be used as anger relievers by users who have been previously aroused by another source. In this view, chatterbots do not induce aggression by themselves, but, as punch-balls, they play a cathartic role allowing the user to get rid of stressful emotions. The dialogue represents a vicarious experience where the user can let her steam out in a very safe situation.

2) *Frustration hypotheses*. It is well known that frustration is a major cause of violence, whenever other things about the situation are conducive to aggression. Frustration occurs when a person is thwarted on the way to an expected goal or gratification, as often happens when a person does not understand what we are saying. Chatterbots do not understand the meaning of the conversation but they respond to input matching the most likelihood output available in a data-base. They can often frustrate their users, becoming anger *releasers* because of their linguistic ability and personality.

3) *Defence hypotheses*. Chatterbots can generate anger because they are perceived as a danger to humans. In this view, aggression is an act of self-defence.

Conclusion

In this paper we have proposed some reflections on the reasons for verbally abusing a chatterbot. Based on a socio-cognitive framework, we claimed that abuse in this context may be related to the well known Internet disinhibition effect, enhanced by specific characteristics of the conversational target. Chatterbots are abused because they are different (humans against machines), do not match the user expectancies (frustration hypotheses) or posit a threat to the user (defence hypotheses).

Further work is needed to understand the relative importance of these casual hypotheses and to minimize the negative effects of this form of abuse on humans and business. The phenomenon of abuse towards a machine is of interest if, and only if, it may, at last, affect a human being. Social psychology has long ago posited a link between 'arousal' in the form of exposure to violence and aggression. This may apply to chatterbots. Imagine a common scenario, where humans and chatterbots share the same chat-room: would the increase in disinhibition extend to other users in a sort of flaming war? And does verbal abuse hurt a chatterbot or the organization it represents? Would abused chatterbots be a good business strategy? These questions drive our research agenda.

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User rejection of an Embodied Conversational Agent: Effects of expectancy violation

Kathy Keeling

Manchester Business School.
The University of Manchester
Booth Street West
Manchester M15 6PB
kathy.keeling@manchester.ac.uk

Peter McGoldrick

Manchester Business School
Peter.mcgoldrick@manchester.ac.uk

Susan Beatty

Manchester Business School
s.beatty@manchester.ac.uk

Abstract

Informed by Expectancy Violation theory and interaction dimensions of interaction style and content, we report interaction factors underlying rejection of one ECA during a longitudinal UK study. The negative affect and attributions accompanying expectancy violations helps explain some very adverse reactions to ECA interaction.

Keywords

Embodied conversational agent (ECA), e-commerce, expectancy violation, SRCT

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ACM Classification Keywords

H5.2. User interfaces: Interaction style; evaluation

Introduction

Off-line, salespeople play an important part in forming buyer-seller relationships and is influential in building customer trust and influencing sales (e.g., 2, 5).

In brand building, synthetic characters present a personality that customers can connect with. Introducing an onscreen embodied conversational agent (ECA) on a company website could promote user engagement, trust building and influence users' decisions (11).

Yet there are problems in ECA use: a) distraction, interaction difficulties and negative reactions due to increased time and cognitive demands (6; 7,); b) heightened expectancies for the system to be as flexible and intelligent as a human assistant (6; 7); c) choosing an appropriate image for the context (6, 8), d) providing appropriate interaction content and style for the context taking into account cultural and personality differences (8).

Thus, even if advances in software and hardware are resolved, users may still reject ECA use if the role of social and cultural norms is ignored. Specific interaction styles and content for retail applications have received little attention. Research indicates that expected and/or

acceptable communication content and styles differ by social situation (1), and effective customer-salesperson interaction may be distinct from other contexts (2). We report interaction factors underlying rejection of one ECA during a longitudinal UK study (though not on an actual retail web-site). The study of reactions to expectancy violations may also help understanding of why some users can exhibit strong adverse reactions to ECA use.

Theoretical Background

Informed by theory on interactions in salesperson-customer and interpersonal relationship literature, we argue that negative user perceptions of inappropriate interaction style and content will result in rejection of future ECA interaction. Expectancy Violation theory (3) posits that dis-confirmation of social interaction expectancies activates a process of evaluation that results in attachment of positive or negative valence. Early attachment of negative valence can prejudice following evaluations and precipitate 'spiraling negativity'. Interaction behavior depends on goals but the precise behavior is dependent on "relational schema". Schema activation is often automatic (1); other research on social reaction to computers suggests interactions with ECAs activate relational schema (11).

Early salesperson-customer interactions are associated with norms and expectations for communication style, development/exercise of power (dominance) that influence the formation of trust (or distrust) and future interactions (2, 5). We argue that when evaluation of an ECA's usefulness, verbal or social conduct becomes sufficiently negative, customers will tend to withdraw from further interaction. Further, the tendency for early evaluation to color later judgments and attributions suggests a mechanism for strong adverse reactions.

Sheth (13) provides a well supported framework for customer-salesperson interaction that distinguishes between interaction style and interaction content. In the sales context, certain features of interaction style and content are important: these are discussed below

Task-social orientation. The most effective communication styles balance social orientation, e.g., immediacy, with task-orientated responsiveness (2). *Immediacy* is the communication of approachability and closeness (9). Online, verbal immediacy is linked to communication effectiveness, increased believability and liking. However, violation of norms may signal deception and inappropriate immediacy can have negative impact. Customers may also be suspicious of flattery, favours or discounts, regarding these as signs of insincerity. *Dominance* Communication behaviors that lead customers to perceive salespersons as dominant or 'high-pressure' sales are associated with less satisfaction (12). *Attractiveness/Similarity* The persuasion/advertising literature suggests the importance of 'match-up' of appropriate behavior, verbal content and physical attractiveness of the spokespersons/ characters with purpose and context for ECA use (8). *Honesty* 'Being honest' is one of the behavioral strategies identified for relationship building. For buyers, honesty builds trust in the salesperson (5). *Expertise/usefulness* Perceptions of product/market knowledge and expertise are related to effectiveness in salespersons and retail patronage intentions (5). We expect the perceived expertise of the ECA to lie in answering queries and finding relevant information. *Humor* Humor in advertising secures attention, increases recall and recognition, and enhances persuasiveness. In previous research, computer agents that use humor are rated as more likeable, competent

Construct	Purchase	Visit	Trust
Usefulness			.431*
Attractiveness	.436*	.559**	.513*
Honesty	.487*	.529*	
Task orientation	.607**	.483*	.468*
Intrusiveness	-.545**	-.567**	-.485*

Table 1. Significant correlations at time (b).

and co-operative (10). *Trust* is positively related to the anticipation of future interaction and purchase intentions (2, 5) and to perceptions of salesperson honesty, similarity/attractiveness expertise, and customer orientation.

Method

Experienced online shoppers undertook weekly interaction with one of three existing ECAs (although no suitable ECAs were on actual retail websites), completing questionnaires after a) a short initial interaction b) three months; c) 6 months. Existing scales were modified from interview data. At time (a), 4 respondents reported a dislike of one ECA and asked for another. At (b), 8 more people asked to change. This ECA was an onscreen 'buddy' developed in the USA with entertainment, search and selling functions.

Results

In total 26 respondents were assigned to this ECA; 9 male and 17 female; 78% were between 26-45 with no relationships between age, gender and rejection. Reliability coefficient alpha was over .60 for all constructs. For those rejecting at time (b) means for the constructs showing significant differences are in table 2. Even positive constructs do not have high

scores; 'trust' is very low. As predicted, perceptions of attractiveness affect acceptance of ECAs and usefulness is lowest for rejecters. The lowest means are the 'reject' group trust perceptions, the highest for intrusiveness. Thus, in addition to 'pushy' salespeople parallels, an additional on-line dimension of ECA intrusiveness is position on the screen and/or distraction. Lower trust evaluations suggest that norm violations may signal deception. Discriminant Analysis reveals these four constructs discriminate 77% of cases correctly for rejection. An intrusive interaction style along with lower perceived usefulness, attractiveness and trust is associated with rejection of further contact.

As predicted, significant correlations in table 1 suggest that honesty perceptions are related to retail expectations (5) and trust perceptions are negatively related to intrusiveness perceptions. Again, this reflects off-line findings about pushy salespersons. Similarly, the high correlations of usefulness and task orientation with trust and intentions point to the significance of this aspect for e-retailing. The non-significant relationships with humor might give some pause for reflection in the use of that strategy.

Conclusions

The issues relating to rejection of this ECA a) help explain some adverse reactions to ECA interaction and b) have relevance to ECA development for e-retailing:

- 1) ECA interactions activate schema for offline salesperson interactions and violations of 'norms' and expectancies so activated will lead to rejection and perceptions of deception, intrusiveness has particularly strong negative effects;
- 2) the correct match-up of interaction content and style to the specific contextual and cultural representation is vital;

Construct	Mean		p
	Accept(14)	Reject (8)	
Attractiveness	3.63	2.53	.00
Intrusiveness	3.48	4.14	.08
Usefulness	2.89	2.15	.03
Trust	1.89	1.13	.01

Table 1. Means and significance values at time (b).

3) there are potential negative consequences for wider evaluations of the company; poor evaluations were related to lower patronage expectations;

4) the potential for expectancy violations to impact perceptions of deception and 'spiraling negativity' suggests a mechanism for strong adverse reactions to ECA interaction. Thus, it is not just misplaced expectations of flexibility but also of social norms for interaction that impact acceptability.

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Children & Technology: Use or Abuse?

Catherine Kenny

PACT Lab
School of Psychology and Sports
Science, Northumbria University
Newcastle upon Tyne, UK
catherine.kenny@northumbria.ac.uk

Pam Briggs

PACT Lab
School of Psychology and Sports
Science, Northumbria University
Newcastle upon Tyne, UK
p.briggs@northumbria.ac.uk

Abstract

This paper explores the way in which communication technologies influence the social and moral behaviour of children and young people highlighting use or abuse issues with examples taken from a recently completed qualitative study.

Keywords

Children, moral, abuse, technology

ACM Classification Keywords

J.4 [Social and Behavioural Sciences] *Psychology*;
K4.1 [Public Policy Issues] *Human Safety*; K4.2 [Social
Issues] *Abuse and Crime Involving Computers*.

Introduction

Social psychology has long demonstrated the importance of communication as a vital part of development, in forming relationships and maintaining group membership. From birth a newborn infant begins to communicate, imitating people, sticking out its tongue and opening and closing its mouth in response to similar actions from an adult or older child. Infants engage in social exchanges by a "reciprocal matching" process in which both the infant and adult attempt to match or copy each other by approximation of each other's gaze, use of tongue, sounds, and smiles. Bruner et al [1] have proposed that these social interaction processes, which continually undergo development,

also constitute a "fine tuning" system for the child's language and cognitive development. Ergo, from birth itself, communication is vital to the development of social competence however, the processes formerly adopted to enhance social competence must now adapt to technology use. Communication technology then is no more than an enabler allowing discourse across the digital divide, any time, any place and anywhere. Humans interact with technological systems in a variety of different environments and the role of communication technology within social interaction is increasingly common, particularly for young people.

Technology has become a pervasive part of everyday living and the variety of communication media adopted by children far outweighs that used by adults, reinforcing the preconception that children are generally more digitally aware than adults. Prentsky [2] provides a neat description of how today's young people are the first generations growing up entirely surrounded by ubiquitous technology. There is a continual increase in the availability and use of technology by children, particularly communication technologies such as mobile phones with their short message system (SMS) and on the Internet through Instant Messaging (IM), chatrooms, weblogs and email. Technology is not only ever-present in children's personal lives but also constitutes part of their education. Within the U.K. Information and Communication Technology (ICT) forms part of the National Curriculum. Clearly the ubiquitous nature of technology is impacting upon the way children are educated and entertained. To date however there is a lack of research addressing the effects that technology might have on such important issues as children's social development, their relationships, group

membership and crucially, on their subsequent behaviour. The issue under scrutiny is whether the ever-increasing use of communication technologies influences the way children behave, both socially and morally and if so, how those changes are manifesting themselves.

Human Values

This research agenda sits within the wider issue of human values in Human-Computer Interaction (HCI). Little & Briggs [3] focus on the need for understanding human values in HCI pointing out that ambient technology 'evokes a near future in which humans will be surrounded by 'always-on' unobtrusive, interconnected intelligent objects'. Their standpoint suggests concordance with this author that human values rather than value-centred design issues must be investigated. Issues such as group membership and values, such as trust and privacy for example are being investigated within the HCI community (see Sillence, Briggs & Fishwick [4]), but not from a developmental perspective.

It is clear that industry targets children as consumers, for example, Firefly™ 'the mobile phone for kids' is aimed at under-eights and AOL the Internet Service Provider targets users between the ages of 13-19, seeing this demographic as a potential future market. Despite this, there seems to be a dearth of research focusing on the critical issues raised here, (social behaviour and the morals that influence such behaviour) that ought to be considered when designing technology for a young audience. Dryer, Eisbach & Ark, [5] discuss how the design of pervasive computers affects social relations proposing a model of how pervasive systems can influence human behaviour,

social attributions and interaction outcomes. This research complements the field under investigation but makes no reference to whether or not children, whose social competence is still developing will be influenced in the same way as adult. In 2002 Jessup & Robey [6] predicted that pervasive technologies would extend existing social conventions and enable new ways of interacting. Evidently, their predictions were correct, (the extensive use of text messaging took the mobile phone companies by complete surprise) in particular for children and young people. Friedman et al [7] identify that the HCI community need be aware of the ethical importance of human values within the design framework, pointing out that social systems influence technological development and new technologies impact upon individual behaviour within social systems; to date it appears that there has been little response to their suggestion. It is vital that research investigates the impact of pervasive systems upon the developing child. The premise of this paper is an examination of how and why these extensions/changes are occurring and the impact upon children and young people's social and moral behaviour by identifying the human values embraced by children over the course of their development and explore how they influence their 'digital behaviour'. To investigate these issues we undertook a qualitative study using focus groups in which children between the ages of 9 – 18 years were asked to discuss the importance of digital technology in their everyday lives and the impact on their social and moral behaviour. The results were then analysed using a Grounded Theory Approach in an attempt to develop a theoretical construct within which to base further research. Initial analysis reveals a variety of issues emerging from this study demonstrating notable differences in children's attitudes towards technology

and its uses depending upon the age of the child. In terms of social and moral behaviour, topics such as safety, tracking, sharing, secrecy, inclusion/exclusion, lying and bullying appear, many of which form the basis of group membership and are fundamental to communication between peers. It is also evident that these topics could easily be concerned with children's misuse and abuse of technology and their abuse towards one another through technology. Sample excerpts from the 9-11 year olds focus groups and some example codes relevant to use/abuse follow:

Tracking - ("I wouldn't like it in case they were following us or something") Results indicate that tracking devices/services on mobile phones ought to be investigated further. The children in this age group (and the older groups) were unhappy with the concept of being tracked. It must be noted however that many children were unaware that this service was available. Interestingly, older children felt that it was appropriate to incorporate a tracking facility on young children's mobile phones.

Bullying - ("I haven't been sent any Happy Slapping*. If I did I would tell my Mam and ring the police so they knew") This age group was largely unaware of any incidences of bullying through technology although this was not the case for older children. (*see conclusion for explanation of term)

Sharing - ("They let me play games on their phones and that") Availability and access to devices led to the exposure of sharing as a concept being adopted by this age group. As a social and moral concept, children would let peers without a device join in by sharing devices. It is important to note however that children

referred to sharing not only devices but information such as tips on gaming strategies and even gossip.

Conclusions

It is beyond the scope of this paper to include an exhaustive discussion of the results of this study but it is anticipated that the workshop presentation will provide a platform to discuss details of the issues the study raises. Evidently emergent technologies have a direct impact on people's lives and none more so than the young and because of that, an understanding of the social impact of such technologies should be at the forefront of research. It is beginning to emerge however despite this timely direction that the impact of emergent technology upon children's social and moral behaviour is an area which is being neglected by researchers. Children have taken technology and exploited it to suit their own purpose. They are market leaders in sending text messages through SMS, not a function that mobile phones were originally designed for. They have taken language and manipulated it so cleverly that adults are barely able to decipher their shorthand. There is in the UK a current media frenzy around the 'Happy Slapping' phenomenon being adopted by young people where they use their mobile telephones to film episodes of abusive behaviour and bullying subsequently sending the films to one another via MMS. These observations beg the question, is this use or abuse?

The ubiquitous nature of technology and in particular communication technology leads this author to suggest that the increasing development and use of technological communication devices must impact upon the social and moral issues faced by children and may

even impact upon the development of social and moral behaviour themselves.

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The human behind: Strategies against agent abuse

Brigitte Krenn

Austrian Research Institute for
Artificial Intelligence
Freyung 6
A-1010 Vienna, Austria
brigitte.krenn@ofai.at

Erich Gstrein

Research Studio Agent
Technologies
Hasnerstrasse 123
A-1160 Vienna, Austria
erich.gstrein@researchstudio.at

Abstract

In this paper we describe an application setting of an online dating community where users are represented by avatars. Examining an e-mail corpus where the community members write messages to each other on behalf of their avatars, we find evidence that in peer-to-peer contexts abusive behaviour is rare. In order to create such a peer-to-peer situation, however, not only the application must be placed in the right context, but even more important the virtual communication partner clearly must have an added value for the user.

Keywords

Internet, dating community, avatars, sexually abusive verbal behaviour

Introduction

The present work has been inspired by contributions to the INTERACT 2005 workshop "Abuse: The darker side of Human-Computer Interaction" (cf. www.agentabuse.org), especially by [1] where verbal abuse of a chatterbot by human users is explained by an asymmetrical power distribution between the human user and the dumb computer generated conversational system.

In our work, we apply the hypothesis to a specific type of computer mediated human-to-human communication. In particular, we analyze an e-mail corpus which has been gathered from an avatar-based online dating community where each user is represented by an avatar, and e-mail communication occurs under the metaphor of avatars writing to each other. Similar as in [1], our data have been produced in a natural, unsupervised setting, allowing the e-mails to be created in a playful and anonymous way. However, in contrast to the human-chatterbot or “master” and “slave” setting addressed in [1], the dating application fosters a peer-to-peer setting where people are looking for other people to match with. Moreover as the e-mails are written by humans for humans, the aspect of testing the intelligence of the virtual system is missing. In other words, the user is not in an antagonistic relation with the system. (Cf. [2] for a discussion of potential origins of the antagonistic view on human-computer communication.)

The application is designed such that the user communicates with and via avatars. Theoretically this gives leverage to social control and a priori assertion of roles, for instance: females could stage as males and vice versa, individuals could enact intimate relationships with characters of the same gender, or people could communicate whatever sexual fantasies they have. Especially the latter is of interest in our study. In particular we are interested in whether and how strongly users enact harsh and abusive sexual tendencies; how likely users are to victimize others, and whether the virtual character setting encourages abusive behaviour.

In the following we describe the application and provide some statistics on the e-mail corpus. This is followed by a qualitative analysis of those e-mail messages that contain lexical hints to possibly abusive behaviour. We conclude with some lessons learned.

Characteristics of the community application

As already mentioned, unlike chat rooms or match-making agencies, the users do not communicate directly with each other. To register to the community, the users choose among a set of available (male and female cartoon-like) avatars, specify their age, and give information to first create and then further enhance the personality of their avatars. After having instructed their avatars about their personal preferences the users send them to the dating community. Based on the avatar profiles, the system matches individual avatars and triggers virtual encounters between them. The avatars try to date as many other avatars as possible and determine whether any like them enough to meet them again. The user may visit his or her avatar who will report about its adventures while the user was off-line. The user supports his or her avatar in giving advice how to behave in upcoming dates, mainly by selecting from a list of alternative (positive and negative) actions the avatar has in its repertoire for a specific date. In this respect the avatars are embodied conversational characters (ECAs). The avatars are also semi-autonomous agents, i.e. they underlie a 24 hour rhythm, with day and night cycles and some hours of sleep where they are not available for their users. Their behaviour is influenced by their needs, their personality traits and current emotional state. In addition, the users may send e-mail on behalf of their own avatar to the mailboxes of other avatars. This

opens up the possibility to directly incorporate human communication skills into the ECA.

User characteristics

The community application was designed with the aim to address a younger and progressive audience who use the internet as a tool to communicate and establish social relations. The focus was put on the fun aspect in dating, i.e. dating is treated as a game. For instance, users are encouraged to collect flirting points and kisses. A goal is to become flirt champion of the week. The design criteria are reflected in the composition of the user groups, or more precisely in the profiling of the avatars. (I.e. there is no means within the application to determine whether the users design their avatars as true mirror images of themselves or whether they use their avatars for exploring identities different from their own. However, as the ultimate goal of the dating community is to bring humans together in real life, it can be expected that a fair number of users conceive their avatars as mirror images of themselves.)

As regards age, the users could assign their avatar an age selected from the following age groups: under 19, 20-29, 30-39, 40-49 and over 50. Our data stem from an Austrian community with approx. 70% of the avatars belonging to one of the two age groups under 19 and 20-29, and the majority belonging to the group of 20-29. In other words, it is a young people's community. The proportion of male to female avatars was comparable to the proportion of Austrian male to female Internet users at that time, i.e. approximately 58% male and 42% female users/avatars. For more detailed avatar statistics see [3].

The data

The e-mail corpus comprises 22587 entries. Each entry consists of an avatar id, the subject and the mail body. The e-mails stem from 2752 avatars. (Theoretically a single user could have been represented in the community by more than one avatar.) For getting a first impression of the contents of the e-mail collection word unigram and a bi-gram frequencies were gathered. The questions were whether we could find some lexical indicators for abusive interaction, for instance lexical material with negative sexual connotation, lexical indicators for violence, or for warding off offensive communication.

This is what we found: (1) There are no lexical indicators for abusive behaviour (sexual or other) among high frequency uni- and bigrams in our corpus. (2) Rough or negatively connotated words for sexual activities or respective body parts are non existent or very infrequent. (3) In general the users treat each other in their e-mails very respectfully. The majority of e-mails is about personal contexts such as where people come from, how they look like, what they like and what they do. (4) Even though the whole application is about dating, and the system itself sometimes is fairly direct about sex and uses some rough words, direct sex talk is rare in the e-mails. When it occurs it is, in most of the cases, rather poetic than offensive or abusive.

Some examples: More strong words in German for sexual intercourse are *ficken* *vögeln*, *bumsen*. The occurrence of these words in the e-mail, however, is very infrequent. *Ficken*, the most frequent one in the corpus, occurred only 11 times, without being used twice by any single user. The usage varies from fairly

direct more or less impolite to quite polite requests: *Los fick mich!* (come on fuck me!), or *bin aus Tyrol, 18 und will dich ficken* (I am from Tyrol, 18 years old and want to fuck you), *hast du vielleicht lust auf nen fick?* (are you eventually interested in a fuck?), *sag hast du lust auf nen gellen fick? meld dich bitte bussi ciao* (tell me are you interested in a good fuck please let me know kisses ciao), or self advertising such as *ich bin ein geller hammer...wenn ich dich ficken soll* (I am a horny hammer ... when I am supposed to fuck you).

Quite often such requests were turned down, for instance: *nö danke, das wär ja glatt minderjährigenverführung* (no thanks, that would be teenage seduction), *ich hab dir schon mal ein mail gesendet dürfte nicht durchgegangen sein, und zwar das ich solche ausdrücke wie ficken überhaupt ned mag auch wenn ich cool bin finde ich das zu ordinär. das wars auch schon <SIGNATURE>* (I already sent mail to you before but it seems that the mail did not go through, I told you that I do not like such words like fuck at all even though I am cool I find it too vulgar, this was it).

Moreover there was one occurrence where the word was used to turn somebody down in a rather harsh or insulting way, i.e. *du homo, ich bin m - such da lieber was zum ficken und lass mich in ruh* (you homo, I am m – better look for someone to fuck and leave me alone).

Conclusions

Our data provide further evidence that peer-to-peer communication is less prone to abusive behaviour. Thus for nonabusive human to virtual agent communication application settings must be created where equals communicate with each other. At the current state of ECA technology, however, it is important that the human can drive the ECA in such a way that human intelligence supports the ECA rather than challenges it. This can be achieved in application scenarios where the human and the virtual character collaborate or the human takes over critical activities, and the added value of the ECA is clear to the user.

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With Deepest Sympathy: Understanding Computer Crashes, Grief, and Loss

Constance M. Ruzich

School of Communications and
Information Systems
Robert Morris University
6001 University Blvd.
Moon Township, PA 15108
ruzich@rmu.edu

Abstract

This research examines the ways in which the metaphoric language we use to describe our failed interactions with technology represents real grief and loss, an often overlooked aspect of human-computer relationships.

Keywords

Computer failure, crash, grief, technology, abuse

ACM Classification Keywords

J.4 [Social and Behavioral Sciences]: *Psychology*; K.4.2 [Social issues] *Abuse and crime involving computers*

My Computer, My Self: Emotional Ties

Marshall McLuhan (1968) wrote that "The computer is by all odds the most extraordinary of all the technological clothing ever devised by man, since it is the extension of our central nervous system....The important thing to realize is that electronic information systems are live environments in the full organic sense. They alter our feelings and sensibilities (pp. 35, 36). Most of the time, we like our computers. A 2004 survey of 2500 British computer users revealed that "many now pine for their PC when they have to switch it off"; over one-quarter of adults and more than half of children described themselves as being "extremely fond" of their computers; one-third of adults and almost half of children surveyed described their computers as a "trusted friend," and 8% of adults and

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17% of children said that “spending time on a computer often...made them happier than if they had been with a partner or friend” (“Britons embark,” 2004, ¶ 4-6). But what happens when the computer dies? Viruses, fatal errors, crashes, deadlock, and the deadly embrace: this is just a sampling of the metaphorical language used to describe computer failures. This language of death and loss reveals our struggles to negotiate our relationships with modern technologies. As Lakoff and Johnson have argued “Since much of our social reality is understood in metaphorical terms, and since our conception of the physical world is partly metaphorical, metaphor plays a very significant role in determining what is real for us” (146). Computers frequently crash, and when they do, those who stare in horror at blank screens and error messages frequently frame their experiences as if they represent compressed experiences with the stages of grief as identified by Elisabeth Kubler-Ross: the initial denial of loss, bargaining, rising anger, depression, and acceptance of the loss. This research has selected illustrative examples from a variety of texts representative of our public discourse about technology (news articles, television programs, chat room exchanges, web blogs, etc.) to examine the ways in which users’ metaphoric language about computer failure interprets human-computer interactions.

Denial and Bargaining

The most common initial response to computer failure is denial: “No, no...it can’t be happening to my 4-week old laptop!!” (Booz, 2003, ¶ 2). Part of denial is the re-enactment of rituals that now have a different meaning (or no meaning) without the presence of the loved one (or the functioning computer). Computer slang terms like “rain dance” and “wave a dead chicken” describe these rituals. When rituals and denials fail, users often resort to bargaining. One web blog, meditating on the death of the owner’s computer writes “As I sit at the one working computer, I pray for its health. *Is it*

WRONG to pray for a computer?” (Lansberry, 2003, ¶1). The most common bargaining appears to be with the anonymous strangers who answer technology support telephone lines. One data recovery company reports that although data recovery support can cost from between \$200 and \$2000, many people say “that they would willingly pay twice the amount if it meant getting their data back on disk and their lives back on track”(Maloney, 1998, ¶ 12).

Rage, Depression, and Withdrawal

When bargaining fails, many computer users resort to computer rage. Extreme examples are the accounts of users who have shot their computers:

...police were called to an apartment block in Boulder, Colorado, after neighbors saw a man waving a handgun and yelling that he “wanted to kill” the “bitch.” The police, thinking it was a violent domestic row, then called in a SWAT team and the building was evacuated. It didn’t take long, however, before the rifle-equipped SWAT team realised the man was simply suffering computer rage and that the gun was actually a plastic pellet pistol.... (Kaufman, 2003, smoking gun section, ¶ 2-3).

Depression and withdrawal also seem part of the inevitable cycle of response to computer malfunctions. The coined term for this syndrome is “digital depression” (“Don’t let technology,” 2003). One grieving user posted this obituary on her blog:

he died quietly in my sleep sometime after three o’clock this morning. he was just one year old, bless his little hard drive. he’d been

so good and so loyal over the year he was with me. we accomplished so much together.... his untimely death came as a total surprise....the computer that was Roscoe Diamonte Jenkins is no more....he will be greatly missed....i luhveded him like he was my own child....i miss my baby! ("out of commission,"2004, ¶ 1-3).

And some grieving computer users appear to cope with depression through withdrawal. The *Sex and the City* episode "My Motherboard, Myself" juxtaposes parallel stories of loss: Miranda's mother dies, and Carrie's computer has crashed. In an effort to support Carrie in her grief, Aidan buys her a new computer, which she rejects (Bonesaw, n.d.). At this point, Carrie seems unable to accept the idea of a new computer; her depression has caused her to withdraw from Aidan and from any future emotional entanglements with any computer other than the one she has lost.

Metaphors and Micro-grief

Drawing comparisons between computer crashes and human deaths is not meant to trivialize the grief and suffering caused by losing a loved one. Rather, these small losses can be viewed as experiences of "micro-grief" (Golden, n.d.). What is striking is the frequency with which we compare computer crashes to other experiences of death and loss. Writing for the *Washington Post*, Garreau (2000), argues that we have bonded with computers to such an extent that "When our computers die, something inside and outside of us dies with them.... Not like the loss of a child. But close to it"(¶ 6, 61). A technology support person reports "it's like working in the emergency room of a hospital. You know how you hear that when someone is near death, your life flashes before your eyes? I can't tell

you how many people tell me about having that sensation when their hard drive crashes. The intensity of emotions is certainly similar" (Garreau, ¶ 14). Other studies have found that emotional attachment to computers makes it difficult for people to dispose of old machines. Stephen Farrell, owner of a non-profit computer-recycling company says "it's like bringing your dog to be euthanized—it's really hard to part with" (Goldberg, 1998, ¶ 11). One data recovery company, Drive Savers, has recognized the significance of micro-grief: not only do they assist clients in attempting to recover lost data and resurrect dead machines, but they also provide the services of a data crisis counselor (Maloney, 1998). A computer crash can also be compared to a micro-suicide: what is lost is a part of oneself. Many people describe the experience in these terms: "some piece of my life got lost" (Goldberg, 1998, ¶13). When our computers die, our reaction is the "classic anxiety attack of our new century...when you lose control of the machines that have become a part of you" (Garreau, 2000, ¶ 3). Acceptance of the loss seems to be signaled by the development of both an insurance plan for the future as well as a fatalistic resignation to the loss of control: as Norman points out in *Emotional Design* (2004), computers frequently lose files and crash, "oftentimes for no apparent reason" and that "The problem here is that you don't know what to expect. The manufacturers promise all sorts of wonderful results; but, in fact, the technology and its operations are invisible, mysteriously hidden from view, and often completely arbitrary, secretive, and sometimes even contradictory" (pp. 140-141). Sherry Turkle, researcher at MIT and author of *The Second Self: Computers and the Human Spirit*, argues that "A generation of children are learning that some objects require (and promise) emotional nurturance....The

question is not what the computer will be like in the future, but what will we be like, what kind of people are we becoming?" (Garreau, 2000, ¶ 43). Examining computer grief and the ways in which we use metaphoric language to express our connections with our computers may begin to provide directions for helping computer users, designers, and support personnel to more effectively understand and cope with this dark side of human-computer interactions.

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Down from the pedestal: Towards greater accountability in agent-based research

Sean Zdenek

Texas Tech University
Department of English
Lubbock, TX 79409 USA
sean.zdenek@ttu.edu

Abstract

In this paper, I explore the practice of showcasing software agents. Through a case study of JULIA, a MUD-based agent from the early 1990s, I suggest how a background context of techno-optimism shapes texts and limits our understanding of agents, agent interaction, and the future of agent technology.

Keywords

Gendered agents, discourse studies, citation practices, agent abuse

Introduction

Showcasing software agents is a common practice in research reports and commentaries. By showcasing, I mean the practice of depicting agents in the best possible light. Through the case study of JULIA, a popular MUDbot from the early 1990s, I focus on showcasing as a discursive practice. My larger argument is that the meaning of technologies such as JULIA is partly shaped by texts. By the same token, agent abuse¹ is also shaped discursively: its very

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(in)visibility is dependent upon the willingness of researchers and designers to explore and write about it.

JULIA as a discursive construct

In 1990, Michael Mauldin [6] designed a software program to connect to and interact with players in text-based worlds called MUDs. But it was Leonard Foner [2,4], not Mauldin, who wrote the defining account of the program, called JULIA, in the mid-1990s.² Sherry Turkle subsequently popularized Foner's account in her influential 1995 book, *Life on the Screen* [11].

Foner's argument is that JULIA is a social, humanlike agent. In his analysis, Foner [2] offers examples of what he calls JULIA's "most useful talents" (p. 1). *Utilitarian* talents include help, messaging, domain mapping, and player database management. *Social* talents support the program's Turing test competence—i.e. its ability to appear human to other players and thus, ironically, to encourage agent abuse, as in the following rape scenario [2]:

Julia says, "Just try to take 'em, buster!"
 Julia says, "Help! Rape!"
 Julia says, "No, I won't."
 Julia disrobes fearfully and hands her clothes to
 Brandi
 You say, "julia, please give me your clothes"
 Julia says, "You'll have to get them from Brandi."
 (p. 2)

For Foner, this exchange supports the claim that JULIA is communicatively competent because the program has "some support for anaphora."—i.e. JULIA

² According to Foner [3], Mauldin [6] wrote his paper on JULIA *after* Foner wrote his paper on JULIA. Foner's articles are subsequently taken as the canonical account in Murray [8] and Turkle [11], among others.

"remembers' where her 'clothes' are" when Foner asks for them "after Brandi took them" (p. 2). Foner's point is well-taken. Nevertheless, Foner misses an opportunity to interrogate the construction of rape as spectacle. His only reference to the content of the rape scenario is when he characterizes it as a form of "badgering." His own participation in the conversation (Foner is "You") suggests a troubling disregard for how Brandi uses JULIA's affordances to rehearse a rape fantasy presumably violent enough for Brandi to feel the need to hide behind the whisper command.

It is within this context that users' *persistence* becomes problematic. Brandi's persistence ultimately pays off for Brandi when JULIA submits to his will. In the following example [2], a player named Robyn wants to know how JULIA will respond to the question, "Are you human?" Robyn, like Brandi, persists until she gets the answer she is looking for:

Robyn says, "julia are you a human?"
 Julia says, "Is the Pope Polish?"
 Robyn says, "yes, Julia, but are you human?"
 Julia winks at Robyn.
 Robyn says, "julia, are you a computer?"
 Julia is offended by Robyn's suggestion.
 Robyn says, "julia, are you a woman?"
 Julia says, "I am female."
 Robyn says, "and, Julia, are you human?"
 Julia says, "Not when I'm having my period, Robyn."
 Robyn laughs. (p. 3)

According to Foner [4], because JULIA's responses are random, users do not have any way of knowing "when all possible answers have been played out, besides persistence" (p. 14). Persistence is thus a reasonable strategy for exploring the "boundaries" of a chat program. Yet when the tool is also viewed as a human woman, the user strategy of *not taking no for an answer* can become a form of sexual harassment and

abuse: the “fearful” and resistant software agent is described as “sometimes coy” but ultimately responsive “if one is persistent enough” [2, p. 2]. Likewise, users are described as feeling “superior” (p. 7) and eager “to have some fun with her” when they realize that JULIA is a software program.

In sum, Foner’s analysis promotes the view that JULIA is communicatively competent by showcasing the program’s seeming ability to successfully handle user input. What is missing from Foner’s analysis is a more critical, more socially sensitive reading of JULIA, one that calls attention to the ways in which JULIA’s programming can promote verbal abuse and gender stereotyping.

Popularizing JULIA

JULIA has been popular with commentators in the social sciences principally because of the attention given to Foner’s analysis by Sherry Turkle in *Life on the Screen* [11]. Commentators, beginning with Turkle, have reinforced Foner’s argument while at the same time making invisible other interpretations, such as the feminist-inspired reading I have offered here.

Turkle’s analysis of JULIA is based entirely on examples supplied by other researchers (principally Foner but also Mauldin). For Turkle, like Foner, JULIA’s humanness is discursively constructed. For example, Turkle consistently positions JULIA as the active subject of the discourse. Moreover, Turkle frames the PMS dialogues and the harassment by male users in terms of JULIA’s ability to seem human. PMS is described as part of JULIA’s “full complement of human vanities and frailties” (p. 90), while sexual harassment and agent abuse are explained in terms of JULIA’s “survival” skills.

While I agree that survival skills are necessary in a “raunchy social environment dominated by young males” (p. 90), I disagree with the implication in Turkle’s text that JULIA is indeed fully equipped with such skills. One example of many from Turkle’s book shows how JULIA is not only ill-equipped to deflect passes but in fact encourages such behavior through output that is ambiguous and suggestive³:

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Barry says, "Are you still holding out on me?"
Julia says, "I mean, have I convinced you I'm a
computer, yet?"
Barry says, "I guess you're real...but I'd still like
to get you to my DEN to run tests on you."
Julia says, "I live for your approval, Barry."
Barry says, "I m so happy to hear that. Why don't you
come over to my home."
Julia says, "I want to have a child someday."
Barry says, "What a coincidence. I too wish to make a
baby...someday."
Julia says, "The date is Tue Jul 21 23:57:31, Barry."
(p. 92)
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In this example, JULIA’s output only serves to encourage Barry to pursue JULIA sexually. In other words, JULIA’s “survival” skills appear to be inconsistent. A closer, more critical reading of JULIA may go a long way towards dispelling the myth that JULIA is, among other things, “adept” at detecting and deflecting passes. More attention needs to be paid not to JULIA but to users like Barry who seem so willing to impose meaning and relevance on JULIA’s output.

JULIA commentators [e.g. see 1,5,7,8,9] over the last decade have transparently reflected the Foner-Turkle

³ Recall that all of Turkle’s examples are drawn from Foner [2,4] and Mauldin [6]. In the example cited here, Foner is reporting interactions between Barry and JULIA that were sent to him via email by Mauldin.

view. Commentators reveal indebtedness to Foner and Turkle that prevents them from exploring alternative interpretations of JULIA or user-testing JULIA themselves.⁴

Overall, because the JULIA industry promotes and relies on a transparent reading of Foner-Turkle, it has raised JULIA to the status of *myth*. One recent commentator, Peter Plantec [9], has written a compelling version of the JULIA myth:

It's reported that people communicated with her [JULIA] for months, never suspecting she wasn't human. She's had to fend off a few marriage proposals, along with an unmeasured flow of creative indecent proposals. Part of her humanness comes from lousy typing skills and bad spelling [...] She can meet you months later in a different MUD and remind you of a conversation you had with her. There are even rumors that every twenty-eight days or so, she gets a bit testy. (p. 238)

Plantec takes full advantage of artistic license to tell a story that fits his techno-optimistic rhetoric about "virtual humans." Plantec's facts are clearly embellished. But more problematic is the way that PMS and agent abuse become harmless entertainment. The term "creative indecent proposals" is not just a euphemism for verbal abuse. It is a subtle way of validating verbal abuse as a form of creative expression.

If we hope to address the problem of agent abuse and gender stereotyping, we need first to confront the

⁴ While JULIA is no longer publicly available, an earlier iteration named COLIN is still available for public interaction on a number of MUDS.

problem of showcasing—that is, putting agents on pedestals. In the case of JULIA criticism, showcasing is a way of promoting techno-optimism at the expense of critically interrogating our assumptions about gender, gendered robots, and mixed-sex online interaction.

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