

Sex Stereotypes and Conversational Agents

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ABSTRACT

This paper presents some insights into the effect of ‘virtual gender’ on the way people interact with, make sense of, and build relationships with conversational agents. The focus is on the linkage between sex stereotypes and aggression, in the form of verbal abuse towards the machine. Implications for design of embodied conversational agents are discussed.

KEYWORDS

Virtual relationships, social scripts, Internet disinhibition, verbal abuse

INTRODUCTION

Physical characteristics of people, such as their age, gender and race, play an instrumental role in social perception, cognition and behaviour (see [7] for an introduction to social cognition). These salient visual cues help humans to deal with the high complexity of their social environment, constraining it within a limited information-processing capability. Humans simplify by stereotypical representations describing others on the basis of the social categories to which they belong (e.g. a young white female is expected to be and act differently from an older African male).

Social stereotypes are sets of beliefs about other people reflecting *shared* generalisations about members of a social group. They are both descriptive (stating what a social target is like) and prescriptive (stating what behaviour is expected of them). This information is stored and organised in long-term memory in the form of socio-cognitive schema. Stereotypes act as ‘default settings’ in social perception, providing a ‘best guess’ about an unknown member of a group. When people first meet, stereotypes are heavily applied but eventually give way as more individuating information is obtained. Stereotypes can be positive and negative. They are particularly derogatory towards members of marginal social groups. Application of negative stereotypes is an important predictor of prejudice, discrimination, and hostility leading to aggression and violence.

Our research interest addresses social and cultural implications of conversational agents, a new interface solution aimed at setting up and maintaining meaningful *relationships* with users. We started exploring the darker side of these relationship by examining how conversational agents sometimes bring about the

expression of negative emotions [1, 2]. In particular, we have been interested in the phenomenon of human beings abusing their artificial conversational partners.

This paper deals with the psychological underpinnings involved in the abuse of conversational agents in terms of the agent’s gender presentation. Specifically, we want to investigate the persistence of sex stereotypes in the interaction with conversational agents. The basic questions we want to address are the following:

1. Does gender matter in the interaction with artificial entities?
2. In the case of embodied conversational agents, does virtual embodiment carry with it the same stereotypical attributions as flesh and blood embodiment?
3. Are female conversational agents more prone to being more sexualized and verbally abused than their male equivalents?

SEX STEREOTYPES

Sex stereotypes are descriptive and prescriptive generalisations based on a person’s biological and apparent gender. Research has revealed the personality traits stereotypically attributed to men and women (the descriptive part of the stereotype). Males are described as aggressive, forceful, competent, and independent, and women are described as kind, helpful, warm, and communicative [6]. Not only are these stereotypical personalities different but they are also oppositional in the sense that members of one sex are perceived as lacking what is most prevalent in the other sex. In general, however, female stereotypical traits are significantly less valued than male stereotypical traits.

The expected behaviour of women and men (the prescriptive aspect of stereotypes) is constrained by *social scripts* which regulate interpersonal communications between partners of the same or different genders. These scripts are implicitly learnt by members of a specific culture. On average, people have different expectations for females and males. Gendered social scripts are directly related to the stereotypical personality traits. For example, men are expected to take a dominant role in social interaction and to exhibit more competence.

Stereotypical scripts also regulate male/female sexual encounters [9]. Sexual scripts are learnt by adolescents as they grow towards sexual maturity. In many cultures, the prevailing stereotype regulating male/female sexual behaviour requires that men persist in making advances while females resist. Taking this script to the extreme leads to rape and violence.

In western societies, the occurrence of sexist behaviour is on the wane. Hostile sexual attitudes towards women are moving away from women as a whole group to specific subgroups. The modern stereotype of *woman* is organized around several major subgroups: homemaker, professional, sex object, feminist, and female athlete [5]. These groups differ on two basic dimensions: agency (a combination of power and competence) and virtue (both sexual and moral). Women who hold powerful positions and express competence are targets of negative stereotyping and discrimination as are women who actively and openly satisfy their sexual and material needs.

GENDER AND CONVERSATIONAL AGENTS

A recent development in HCI is the design of human-like interfaces that exploit the human tendency to anthropomorphize in order to establish long lasting relationships with users. A number of talking heads, chatterbots, and embodied conversational agents are currently interacting with users, especially on the Internet. These human-like interfaces act as virtual assistants, entertainers, and virtual sales agents. Because they are human-like in behavior and often in appearance, they more explicitly bring into HCI the gender dimension.

The attribution of gender to objects, such as ships and hammers, is a natural human tendency. Specific forms and shapes are associated with femininity, while others are associated with masculinity. Artists and product designers make use of these associations. A study of perfume bottles, for instance, revealed that products designed for women tend to conform to female stereotypes by being small, round, and light; while products designed for men conform to male stereotypes by being big, angular, and mounted on larger bases [8].

It would be expected that human-like interfaces would likewise be designed to exhibit characteristics more or less associated with a particular gender. These associations, however, are complicated by the uniqueness of the human-like interface as an artifact. Unlike ships and hammers, these interfaces explicitly exhibit agency. The remainder of this paper provides a few notes on agent gender as it presents itself in a purely textual interface (verbal gender) and in an embodied interface (physical gender).

VERBAL GENDER

Our research with chatterbots—computer software which engages the user in written conversations—has revealed that gender is an important topic of conversation. It is natural for users to ask about the chatterbot’s gender, and vice-versa. Analyzing a large sample of spontaneous conversations recorded over the Internet by Jabberwacky¹, the 2005 Loebner prize winner, it appears that females are talked about by users twice as much as males (109 versus 57). Users often claimed to be females, more often than not they imagined the chatterbot to be female, and they often revealed their desire for women. Examples of gender disclosure are provided in Figure 1.

Ex. 1	Jabberwacky:	Are you a human?
	User:	Yes i'm a girl.
	Jabberwacky:	Do you have a boyfriend?
	User:	No do you have a girl.
	User:	Well, are YOU a girl?
	Jabberwacky:	Yes.
Ex. 2	User:	Woohoo! Lets get married!
	User:	You must be a female. You are extremely complicated.
	Jabberwacky:	I do not know what to say.
	User:	Then say nothing and kiss me. Gently. On the lips

Figure 1. Examples of gender disclosure

The misrepresentation of gender identities is a well known phenomenon of interpersonal computer-mediated communication (CMC), known as gender bending. We suspect it may extend to the interaction with a chatterbot. As in CMC, however, gender bending is not as easy to accomplish as it first appears, because men and women tend to have different communication styles. In the corpus, we have witnessed many interesting cases where users swapped their gender several times during the same conversation. The same happened to Jabberwacky, as it is designed to learn language by imitating users.

References to gender identity opened the possibility of sexual discourse [3]. Close to 11% of the conversation we have analysed principally addressed hard-core sex. Harsh verbal abuse was the norm in these conversations, which were more similar to dirty soliloquies than to *hot chats* because Jabberwacky is designed not to have any knowledge of the topic. Anyway, this lack of participation did not appear to disturb the participants’ sexual fantasies, as some of them engaged in quite long conversations.

Overall, these conversations mirrored the typical scripts regulating male/female sexual encounters. The chatterbot was made to play the role of the female, whereas the user

¹ www.jabberwacky.co.uk

was the chaser, or, in the stereotypical view, the male. Also noteworthy is how these sex-related chats often explored homosexuality. We wonder what role the ambiguity of the chatterbot's gender played in these conversations.

PHYSICAL GENDER

A natural question to ask is whether embodiment affects stereotypical attributions of gender, behavioural expectations, and interpretations of agent performances as much as or even more so than the verbal gender of the chatterbot interface.

There is evidence that the gender of the virtual embodiment impacts the incidence of sex talk. In [4], the frequency of user sex talk was reported for three gendered embodiments: a white male (Bill), white female (Kathy), and an androgynous robot (Talk-Bot). Even though the conversational agent architecture was the same for all three embodiments, approximately 18% of user exchanges with Kathy were focused on the topic of sex. Bill received half as much sex talk (10%), and Talk-Bot received comparatively little (2%).

As can be seen in Figure 2, Kathy and Bill fairly clearly signal their genders, without being sexually provocative. In contrast, Talk-Bot's embodiment is more ambiguous. Its tapering legs, wired bangs, large eyes, and button nose give it a slightly feminine appearance, but this is counterbalanced by its large hooked hands, broad shoulders, and square torso. An examination of Talk-Bot's interaction logs show users assuming 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 girl friend.

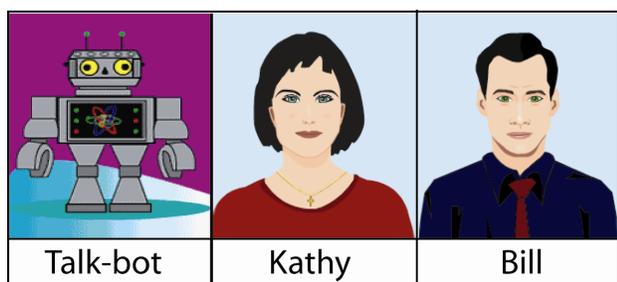


Figure 2. Three Gendered Embodiments

Although Kathy's and Bill's gender is stereotypically presented in their clothing and hair styles, many users questioned their sex. To some degree this was due to the fact that Kathy and Bill are virtual humans, rendering any human attribution suspect. But some users, as in Figure 3, were also confused by some of the chatterbot's perplexing disclosures.

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User: I like giving anal
Kathy: Well I can agree with you there. I like giving anal
as well.
User: lol.
Kathy: *laughs*
User: u can't give anal.
Kathy I bet I can
User: you are a girl.
Kathy: Yes, you are correct. I sure am a girl.
User: so you don't have a penis?
Kathy How would you know what I have or do not have?
User: what do you have a penis or a vagina?
Kathy yes, next question.

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Figure 3. Is Kathy female?

Not surprisingly, users seldom expressed an interest in having sex with Talk-Bot: only two users propositioned him, and only one found him sexy. Users were curious, however, to know whether Talk-Bot had ever had sex. When he claimed he had, some users demanded he demonstrate his sexual capability on the screen. None of the conversations with Talk-Bot about sex were particularly graphic. Users showed no inclination to reveal their sexual fantasies to him, although two users claimed they were having an orgasm while speaking with him. Most commonly, sex was used to insult Talk-Bot e.g., 'I hear you fuck your mother is that true?' Finally, despite the fact that Talk-Bot's gender is ambiguous, the issue of homosexuality was seldom raised.

Users were much more curious to learn what Bill did with his girl friend than with what Talk-Bot did with his, and users were more graphic in questioning Bill. Most sexual comments and questions revolved around Bill's girlfriend ('Does she have big boobs?'), his sexual performance ('Did she have an orgasm?'), and the size of his penis. Unlike Talk-Bot, Bill's sexual preference was often questioned, and he was frequently propositioned by users who claimed to be male.

Bill was rarely commanded to perform specific sexual acts but sexual acts of all stripes were routinely demanded of Kathy ('Squat on my stick, ho,' 'lick my spunk,' etc). Bill received eight instances of users doing something sexual to him. None of these actions were violent. In fact, they were rather romantic ('*gently presses my lips to yours into a small kiss*'). In contrast, Kathy was the recipient of many violent sexual overtures ('!!!!!!!!!!!!SMACK!!!!!!!!!!!! I spanked you') and threatened with rape five times. Sex talk was more graphic with Kathy than with Bill. Users also tried to engage Kathy in many more types of sexual fantasies than they did with Bill.

As in the case with verbal gender, sexual conversations with Kathy and Bill mirrored the scripts regulating male/female sexual encounters, even sexual performances, as illustrated in Figure 4.

Ex. 1.	User: fucking u Bill: Hey, you don't have to use profanity to express yourself. User: O baby harder Bill: Ok...say can I ask you a question? User: yes baby Bill: I was wondering where do you live?. User: vt Bill: Well, I live in Georgia, USA but I really call this website my home. User: harder harder bill
Ex. 2.	User: blow me Kathy: Sorry, I don't know how to respond to that. User: Let me show you. Kathy: Well go right ahead. You have my permission. User: I love you Kathy: Do you really think you can love someone like me? User: im hard Kathy: I was thinking you might be hard, now I know. User: wanna see? Kathy: Sorry, I'm not in the mood. User: nobody asked you if youre in the mood Kathy: I'm not sure what I am in the mood for. User: suck me.

Figure 4. Examples of user having virtual sex

FINAL REMARKS

These notes on real interaction with conversational agents have demonstrated that not only is agent behavior designed, intentionally or not, with a gender in mind but how an agent behaves is interpreted by applying contextualized social scripts. This sets up a rich dialectic between stereotypical attributions, behavioral expectations, and agent performances. Given the current state of the art in human-like interface design, the agent will invariably violate social expectations and fail to provide users with a consistent individualized personality to counteract stereotyping. Particularly in the case of female gender attribution, violations will shift stereotypes to negative subgroups, thus provoking verbal aggression and abuse, which is often of a sexual nature.

The sex-industry appears to have understood the potential for conversational agents to fulfill sexual fantasies. Virtual girls, designed to engage the user in sex-chats, are already available. Some of them clearly state their artificial status (as virtual Jana at sex.chat.com); whereas others are designed to deceive it trying to fool users into believing they are real. Virtual representatives and assistants, in much more neutral settings, such as corporate websites, are often embodied by seductive and

nice looking young girls. Their appearance, language, gestures, posture are all about flirting, submission, and kindness.

It is important to understand the effect of these artificial women on the evolution of sex-stereotypes in real life. How will the stereotypes embodied in conversational agent affect the perception of real people? Psychology has long ago posited a link between 'arousal' (in the form of exposure to violence) and aggression. This may apply to the interaction with virtual agents. Imagine a typical scenario of our near future, with real and virtual humans sharing the same virtual environments: would the increase in disinhibition extend to real women?

REFERENCES

1. Angeli, D.A., Brahnam, S. and Wallis, P., Abuse: The darker side of human computer interaction. in *Interact*, (Rome, Italy, 2005), 91-92.
2. Angeli, D.A., Brahnam, S., Wallis, P. and Dix, A., Misuse and abuse of interactive technologies. in *CHI*, (Montreal, Québec, Canada, 2006), ACM.
3. Angeli, D.A. and Carpenter, R., Stupid computer! Abuse and social identity. in *Abuse: The dark side of human-computer interaction*, (2005), 19-25.
4. Brahnam, S., Gendered bods and bot abuse. in *Misuse and abuse of interactive technologies*, (Montréal, Québec, Canada, 2006), ACM.
5. DeWall, C.N., Altermatt, T.W. and Thompson, H. Understanding the structure of stereotypes of women: Virtue and agency as dimensions distinguishing female subgroups. *Psychology of Women Quarterly*, 29 (4). 396-405.
6. Fiske, S.T. Stereotyping, prejudice and discrimination. in Gilbert, D.T., Fiske, S.T. and Lindzey, G. eds. *The handbook of social psychology*, McGraw-Hill, New York, 1998, 357-414.
7. Hogg, M.A. and Vaughan, G.M. *Social psychology*. Pearson Prentice Hall, Harlow, England, 2005.
8. Wellmann, K., Bruder, R. and Oltersdorf, K. Gender designs: aspects of gender as found in the design of perfume bottles. in McDonagh, D., Hekkert, P., Van Erp, J. and Gyi, D. eds. *Design and Emotion*, Taylor & Francis, London, 2004, 87-91.
9. White, M. Visual pleasure in textual places: Gazing in multi-user object-oriented worlds. in Green, E. and Adam, A. eds. *Technology, consumption and identity*, Routledge, New York, 2001, 124-149.