Politeness in Interaction Design

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ABSTRACT

Principles such as minimising memory requirements, clarifying affordance and providing effective feedback have been widely called upon to explain aspects of user experience. These principles call on research in cognitive psychology, often seen as the "home discipline" of human computer interaction. However, since interacting with a computer can be seen in some ways as a communicative act, it may also be useful to call on principles that have been developed in the core communication science of linguistics, especially pragmatics. In this paper we describe the major features of linguistic politeness theory and suggest ways in which usability problems may usefully be reframed in terms of positive and negative face threats. We consider ways in which UI designers can mitigate these threats by applying politeness strategies.

KEYWORDS

politeness, face, user experience design, pragmatic.

1. INTRODUCTION

Various different metaphors have been used to describe what we do (or what we think we do) when interacting with computers. Researchers have explored analogies from systems thinking, direct manipulation with object worlds, the tool model and the dialogic model amongst others [Carroll, 2003]. Probably no single metaphor is rich or relevant enough to support our thinking about the wide range of phenomena that come under the umbrella of HCI – ease of use, accessibility, learnability, fun, aesthetic appeal – but each contributes its own perspective and associated insights. For instance, an early suggestion from Weller & Hartson was that a closed-loop concept from systems theory explained issues such as feedback in a direct manipulation paradigm [Weller & Hartson, 1992]. The development of the desktop interface suggested a notion of the computer as workspace. This concept of computer as place furnished with physical objects is strengthened, for instance, by Don Norman's work on affordance [Norman, 2002], which has made that term into a key explanatory tool in HCI, using insights into the physical world from cognitive psychology. However the dialogue model, despite a flurry of activity inspired by the work of Miller [2002, 2004], has attracted less interest, perhaps because the modern graphical user interface is less directly modelled on human interaction than older paradigms. The underlying assumption in this paper is that the model of human computer interaction as analogous to human-human linguistic, or more generally, social, interaction is still a powerful and productive one. Concepts, typologies, models and perspectives from the sub-fields of linguistics dealing with social interaction, above all pragmatics [Levinson, 1983; Thomas, 1995], may be useful in the analysis and possibly the design of certain aspects of the digital user experience. After a brief review of the variety of linguistic approaches to HCI, we sketch the most widely used model of linguistic politeness. We then give some examples of usability problems and suggest how they can be framed as politeness issues using this model.

2. COMPUTERS AND DIALOGUE

Studies on linguistically inspired approaches in HCI have tended to take one of two approaches. On the one hand, many linguistically oriented researchers have applied linguistic models to computer-mediated communication (CMC), where the computer is positioned as a communication medium. For others, the interest is in the ways in which human users interact with software that itself simulates to some extent human characteristics, where the computer is positioned as a more or less anthropomorphic agent.

2.1 Computer as medium

Since the 1990's there has been interest in the interactions of human participants linked via various types of software, synchronous, such as video conferencing and chat, or asynchronous, such as email [Herring, 1999; Pemberton & Shurville, 2000; Thurlow et al, 2004]. The 1990's focus on Computer Supported Collaborative Work (CSCW) was a further stimulus to the development of this work [Greif, 1988; Greenberg, 1992; Connolly & Pemberton, 1999] In CMC research, the computer is not a conversational partner but a medium or context of communication between human participants. A number of concepts from mainstream linguistics have been applied in CMC but a core topic has been politeness, which has enjoyed something of a boom as an explanatory device in some contexts over the last 10 years. There has been much interest in the way politeness (or rudeness) is achieved CMC settings using the different resources available to online as opposed to face-to-face interlocutors. [Bunz & Campbell, 2004; Burke et al, 2007; Burke & Kraut, 2008; Duthler, 2006; Harrison, 2000; Park, 2008a, 2008b;]. However, CMC is not our focus in this paper, given that the computer itself is not conceived of as an active participant in this tradition.

2.2 Computer as agent

The concept of computer (or software program) as a dialogue partner can take many forms, with some instantiations, such as natural language programs, exhibiting what we could call "strong" dialogue characteristics, and others, such as multi-touch

applications and VR environments at the other end of the spectrum, with few cues to encourage human-human-like interaction. The "strongest" models will be those that embed multiple cues to feed the perception of a human-like partner, perhaps complementing real-time natural language interaction with a simulation of the presence of an individualised agent with a personality, goals and even a physical appearance. Current help-bots, such as that shown in Figure 1, would be typical examples of programs designed within this paradigm: though not exhibiting strong agency, the system uses physical images together with a dialogic interaction style to encourage the illusion of a human conversational partner.
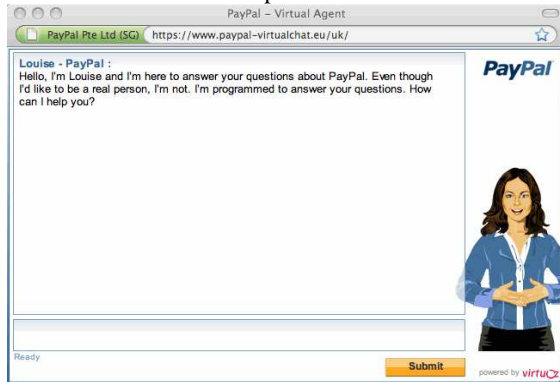

Figure 1: Human-like agent (www.paypal.com)

A body of research has developed over the last 15 years that examines the responses that such systems evoke in their users. Some of this work has taken the affective computing approach popularised by the work of Picard and her lab at MIT [Picard, 1997]. Typical topics here include affect recognition by machines aimed at responding to user emotion in order to reduce frustration and the design of the appearance and behaviour of agents and synthetic characters that project emotion. Work focussed on the issue of politeness in what Zhu [2009] calls "social etiquette agents" in this "strongly human" paradigm includes Zhang et al [2010] on anthropomorphic robots and Zhu's own work on politeness in social service robot design. A particularly active strand of work has explored these issues as they relate to intelligent tutors in educational software [Mishra & Hershey 2004; Tzeng 2004, 2006; Mayer et al, 2006; Johnson & Wang, 2010].

An important point is that it appears that human users need very little encouragement to treat computers as social partners. While a visually rendered agent such as Clippy or one of "his" alternative avatars will evoke an emotional response, so will a line of text. The case of Eliza, an early intelligent system that simulated the behaviour of a Rogerian psycho-analyst by using simple pattern-matching techniques, is well known [Weizenbaum, 1966]. The Eliza interface consisted of command-line text exchange, with users typing in answers to prompts such as "Tell me more about your family": "her" output was the plainest text on an otherwise empty screen. However, by naming the programme, using a dialogic, turn taking approach, and implementing a rudimentary memory for preceding dialogue, Eliza and progeny strongly suggested human agency. Systems don't have to be elaborate and media rich in order to evoke human responses.

The best-known and most extensive example of research into user reactions to computers and other media/devices with perceived human-like traits is the work of Reeves and Naas [1996], who presented the results of a long research programme in their 1996 book, The Media Equation, subtitled "How People Treat Computers, Television and New Media like Real People and places." Reeves and Naas carried out an extended series of studies to investigate whether the effects found in social situations involving human beings were replicated when people interested with screens. Amongst studies into the impact of emotion, personality, roles and form, we find a series of investigations into "Media and manners," including flattery, judgement, interpersonal distance and politeness [see also Naas, 2004]. The emphasis in Reeves and Naas's work here is on the question of whether people try to be polite to computers [p. 21]. For instance, replicating a social science study showing that people who ask questions about themselves evoke more positive answers than those who ask questions about others [Reeves & Naas, p. 262], they demonstrate that this holds true when a computer asks a user about its own performance [p.24]. People didn't want to "hurt the feelings" of the computer asking about its own performance but felt more able to be critical when interacting with a different computer. In a subsequent study, substituting voice interaction for text might have been expected to produce a more marked effect: the fact that this did not happen suggests to Reeves and Naas that the impulse to respond to computers as if they are social actors is so strong that it needs very little in the way of cues. They describe their positions as follows:

> Computers, in the way that they communicate, instruct and take turns interacting, are close enough to human that they encourage *social* responses. The encouragement necessary for such responses need not be much. As long as there are some behaviors that suggest a social response, people will respond accordingly [p. 22].

Reeves and Naas suggest that we don't need strong cues, but the backwards and forwards, turn-taking nature of dialogue is actually very strongly modelled in simple pure text systems, offering suggestive cues for the user to view the system as a conversational partner and to apply the rules of social interaction.

In 2002 Miller chaired an AAAI Symposium on Etiquette and Human-Computer Work calling for etiquette to be accepted as shedding new light on HCI in general [Miller, 2002]. He notes that Reeves and Naas demonstrated that "our willingness to assume intelligence and agency extends far deeper (and requires fewer triggering cues) than we commonly expected, and offer as partial explanation the notion that we are applying schemas learned for interpreting and interacting with humans to other agents that behave, in some minimal ways, like humans. For Miller, "[t]he implications for design are that, as systems become more complex, adaptive, autonomous, etc, the importance for them to exhibit appropriate etiquette increases- and conversely, the sensitivity of users to inappropriate etiquette will increase" [2002, p. 4] In 2004, he edited a special issue of the CACM, again calling for a programme of research into politeness in HCI. Miller suggested a wide perspective yet still the emphasis was on

agent-like model, of "complex, semiautonomous technologies will be regarded as agents" [p. 33], rather than on widely used operating systems and non-specialist software such as office applications, browsers, games, mobile apps and web sites.

In the next section we explore how far the illusion of social interaction extends in situations where there is even less intentional anthropomorphism. The question we explore here is whether "weak human" interface models, where the idea of a conversational partner is minimal or absent are experienced by users as social interaction sites. If so, they should give rise to the expectations of human-human dialogue, making ideas such as linguistic politeness relevant to their analysis and design.

At this point we need to introduce a well-used model of politeness which was developed in order to account for mainly spoken language phenomena. We subsequently apply this model to a number of user experiences with interfaces that do not directly or strongly suggest human-like agency.

3. LINGUISTIC POLITENESS

Politeness refers to the set of mechanisms by which we avoid giving offence in human interaction. The best-known model of linguistic politeness was published in 1987 by Brown and Levinson, on the basis of empirical analysis of politeness phenomena across three cultures. They developed their model from Goffman's theory of face [Goffman, 1959]. The core notion of face is that each of us has a positive notion of our own social value, which we would like to have affirmed in social interactions. However, in social situations, linguistic acts such as criticisms and commands threaten our face: these are face-threatening acts or FTA's. In order for social relationships to be comfortable, human society has developed a rich set of techniques – compliments, apologies, hedges, expressions of false and real modesty and so on – to soften the force of these face threatening acts.

Brown and Levinson distinguish two aspects of face: positive and negative. *Positive face*, which corresponds to our everyday understanding of the term, is characterised by one's desire to be liked, admired or affirmed: "blanking" someone on a social occasion would be a threat to their positive face, as might answering a mobile phone when in the middle of a conversation with them. *Negative face* is the desire to maintain one's freedom of action: negative face could be threatened by a prohibition, for instance, or by a request for a burdensome favour. Brown and Levinson pinpoint a large number of strategies that people use in face-to-face social interaction to mitigate FTA's in both positive and negative face threatening situations, including:

- making a joke of a problem, e.g. "Are you in a hurry to get home?" instead of "You're driving too fast",
- suggesting a social connection between speaker and hearer, e.g. "Shall we close the window?"
- being pessimistic: instead of "Give me ten euros", saying "I don't suppose you have any spare cash do you?" i.e. giving the other person the option of refusing gracefully.

Table 1 gives an example of threats to positive and negative face, with a possible politeness technique for each.

Table 1: Linguistic politeness categories

	Positive Face	Negative Face
Threat	Your new haircut looks dreadful	Give me some money
Possible politeness strategy	Your new haircut is certainly original	You don't have any spare cash I suppose?

It is generally accepted that while specific strategies will differ between cultures, the urge to smooth social interactions by mitigating face threatening acts is a universal one. The implication is that if users perceive interaction with software as sharing the characteristics of interaction with other human beings, even with little in the form of cues or encouragement to do so, they may perceive certain aspects of communcation from the computer as threats to their face, and be offended if these threats are not mitigated.

4. POLITENESS IN SOFTWARE

Face threatening acts are inevitable in software. Situations will always arise when software will need to run the risk of threatening either positive face, by telling the user that the operation they want to carry out has in some way failed, or negative face, by getting in the user's way. Three types of situation in particular seem to run the risk of producing threats to the user's face:

1) Errors: when an operation has gone wrong in some way, e.g. a web page can't be found

2) Security: when the user's identity needs to be obtained or confirmed, e.g. to verify an online purchase

3) Interruptions: when the user may need to be informed urgently of an occurrence that is extraneous to their current goals or activity, e.g. teh need to install a patch or other update.

All these operations, while legitimate goals for software, can either threaten the user's sense of self-worth, stop them doing what they want to do or both. Handling these situations smoothly can be the difference between a good experience and one corresponding to what Whitworth, citing Cooper [1999], evokes when he claims that "often today's software interrupts, overwrites, nags, changes, connects, downloads and installs in ways that annoy and offend users [2009, p. 2]. In this section we discuss some examples of perceived interaction problems in the three situations noted above and discuss how a linguistic politeness perspective can frame and elucidate them.

4.1 Politeness and error warnings

Warnings, in the form of error messages, are well-known sites of contention for computer users and pose the clear risk of being seen as threats to the user's positive face. As Whitworth says, "[b]rusque and often incomprehensible error messages like the "HTTP 404 – File Not Found" imply that you need to fix the problem you have clearly created"[2009, p. 76]. Indeed in a bald 404 message there is a double face threat: an implied attack on the user's

competence (You probably typed the wrong url) and another on negative face (You need to do something about the situation).

Designers have found a number of ways of mitigating this face-threatening act. The default Internet Explorer 404 page (Figure 2) makes some attempt by suggesting a set of possible diagnoses and remedies, albeit at a very general level, including explanations that do not attack the user's positive self-image. The implication is that the user has typed the corret url but that the system has in some way "got it wrong" by changing the page's name, location or availability.
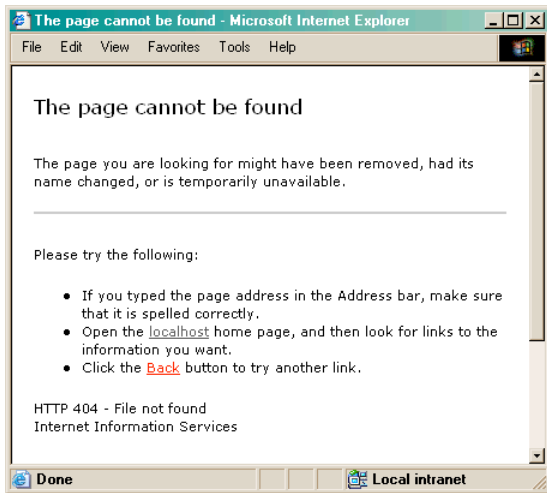
Figure 2: Internet Explorer default 404 page

Google's 404 page (Figure 3) is brusque and unhelpful: "404 that's an error" seems designed deliberately to infuriate. The laconic "That's all we know," scarcely readable and appended to the url code, is similarly unhelpful, with a tinge of smugness. It is hard to judge whether the use of the personal pronoun "we" is an attempt to forge a link with the user or not. However some attempt has been made to mitigate the face threat via humour in the form of the drawing of the distraught robot.
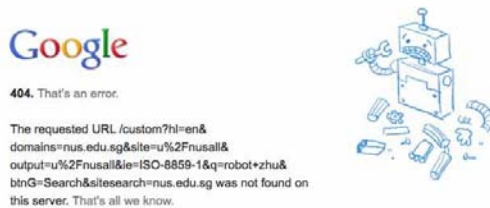

Figure 3: Google 404 page

Firefox's 404 message (Figure 4) is less mixed and makes a serious attempt at a face-saving act by assuming all responsibility for the problem and using light-hearted language (Well this is embarassing) to do so. However, note the use of "Firefox" rather than "I" or "we," discouraging too strong an interpretation of the system as anthropomorphic.
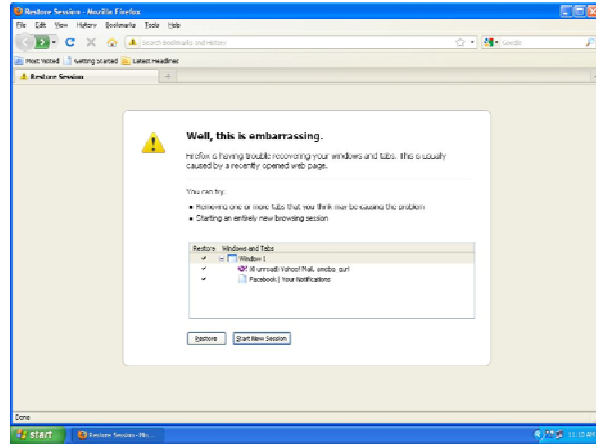

Figure 4: Firefox 404 message

Finally, the example from a competition site in Figure 5 responds to an unknown user name by assuming a heavily humanised form of expression, with self-deprecating humour, plus an apology: "Sorry, but I couldn't find an account" places any blame at the door of the system, while "I could be going mad or you might have typed them wrong," with its multiple strategies – humour, self-deprecation, tentative language - for moving blame from the user is a skilful application of face-saving techniques.
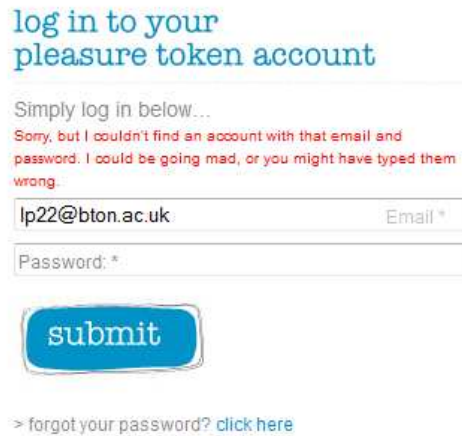

Figure 5: log-in error

4.2 Politeness and security

More and more frequently users are required to identify themselves to systems in order to access information, make purchases, download software and so on. This is a sensitive situation in terms of threats to face, because the demands to identify oneself is usually interpreted as a threat to both positive face (because the system suspects the user of illegitimate goals) and to negative face (because the system forces the user to go through an often complex procedure). In Adams and Sasse's terms, for the system, "the user is the enemy"[Adams & Sasse, 1999]. In situations where the system might have remembered user details but does not, a further threat to positive face is created: the system doesn't even remember the user, thus deflating their positive self image. In human interaction, forgetting the other person's name is perceived as a serious breach of politeness and we will go to extraordinary

lengths to cover up a faulty memory. Softare, hwever, regulalry forgets user details.

Captcha is an interesting example of a system regularly used for security [See Fig. 6]. It has become popular with
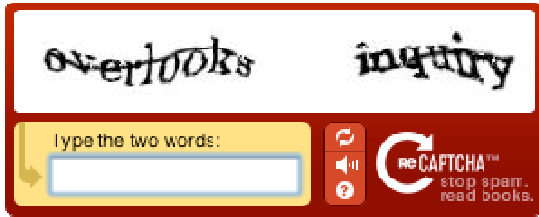

Figure. 6 Captcha example [from www.captcha.com]

developers who need to check the presence of a human user rather than an automated robot. However, Captcha codes are essentially impolite, requiring users to jump through hoops, reading often illegible words, in order to attain a goal that may not be worth the effort. One user of the Interaction Design Pattern Library web site [www.welie.com/patterns] commented:

> Captcha's are a nightmare for user experience. Essentially the burden for spam filtering is shifted from the website provider to the website visitor. The visitor is then presumed to represent a nuisance until he proves otherwise. It's the perfect example of internal needs trumping user centred design principles" [User comment, 25 June 2010].

Security systems are often guilty of threatening the user's positive face by setting them up to fail, e.g. by requiring certain password formats that may not suit the user's chosen password and will subsequently be forgotten, by not providing information about required data types, thus allowing the user to make easily preventable errors, and by making assumptions, e.g. about forms of address, that are not correct [Adams & Sasse, 1999]. In addition, this is clearly a situation where emotions may be fraught: there service may be required urgently, passwords may be forgotten and so on, all adding to user stress.
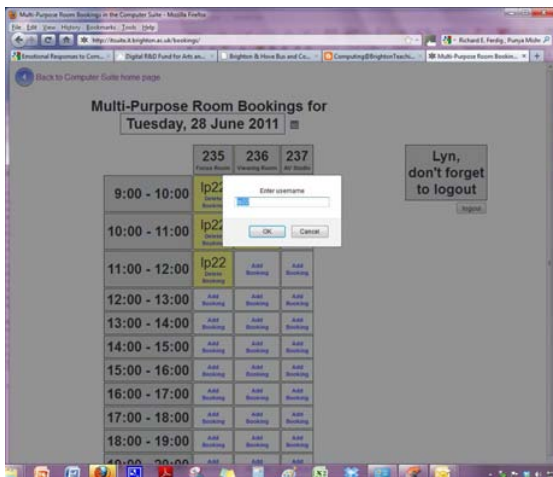

Figure 7: asking for user details

The conflicting demands of security and ease of use make it difficult for a satisfactory solution to be reached here:

often the best that can be done is for as much data as possible to be remembered. In Figure 7, however, we see a particularly impolite piece of software which, despite already having determined the user's identity (visible in the background) nevertheless demands the information to be repeated in order for a room booking to be made, effortlessly attacking both positive and negative face simultaneously.

4.3 Politeness and interrupting

A third category of interaction where software goals make it difficult for the designer to avoid face threatening acts is when a system needs to fulfil its own goals or to make the user aware of information that does not relate to their current goals: in other words, the system has to interrupt the user. Interrupting the user's flow without good reason is a common source of user compaints. The obvious example is Microsoft's much scorned Office Assistant, the avatar-based intelligent interactive help system which popped up to make helpful suggestions, the best known beginning "It looks like you're writing a letter..." (Figure 8)The user's fredom to complete his own task was impeded by this functionality which somehow never seemed to deliver the right help in the right context.
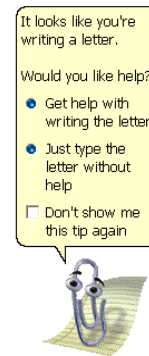

Figure 8: Microsoft Office Assistant

Worse, the appearance of a human-like avatar which demanded to be treated as a conversational partner meant that the user's attention had to be split between their core task and managing a "conversation", however rudimentary, with its concomitant cognitive costs.

Dialogue boxes are a certain means of interrupting the user when used in situations that are not part of the user's task. The confirmatory dialogue in Figure 9 is an example of such misuse: rather than interrupting the user's flow with a dialogue box that prevents any other interaction taking place, the system might have given feedback about a successful operation in a more direct and appropriate way: "[w]hen the operation is finished the interface should indicate that the results are available by displaying them, or that it is ready to accept new commands, by a change in background colour / icon / border etc, or the appearance of an input prompt or message on the status bar, etc" [Ford, n.d].

Notifications of updates from software packages and operating systems are another important category of interruption, clearly threatening the user's negative face. The default design for such a notification is of the type shown in Figure 10.
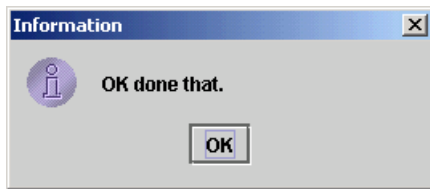
Figure 9: Superfluous dialogue box [from Ford, n.d.]

Figure 10: notification of updates

The designer has identified the potential for impoliteness and has mitigated the threat to the user's negative face by including a "Not Now" option. The question of whether the dialogue box should appear at all is open to debate. An alternative, not entirely happy, solution is the use of animation, as in the Apple tool bar in Figure 11, where an animated icon for Adobe Acrobat creates a different kind of interruption by means of visual distraction.

Figure 11: Adobe animated icon

The development of smart phones has presented a new area for interruption studies, with designers working to develop appropriately polite ways for phones to present calls to users "at the right moment with the appropriate modality" [Chao, 2011]. Innovative solutions here include adjusting the volume of ring tones according to whether the phone is in the user's hand or in her bag, and making judgements from sender identity about which calls to announce [Ho & Intille, 2005].

CONCLUSION

Given the increasing use of digital devices in all contexts, personal and leisure as well as work, it can be argued that avoiding anger and frustration caused by impolite interaction will actually become even more of an issue. Klein et al [2002] point to a number of studies demonstrating the results of user frustration with computer interactions: "with elevated levels of adrenaline and other neuro-chemicals coursing through the body, a person feeling frustration not only has diminished abilities with respect to attention…, memory retention…, learning…, thinking creatively… and polite social interaction… but a penchant for getting more frustrated in the immediate future as well. A frustrating interaction with a computer system can also leave a user feeling negatively disposed toward the system and its makers" [Klein et al, 2002]. We

have suggested in this paper that in certain situations, software designers will need to provide for interactions that in a face to face situation would be interpreted as potentially impolite. We identified three types of situation as sensitive areas where users might easily perceive impoliteness, whether to positive or negative face. These suggested danger points were:

- Checking identity
- User error prevention
- Interruption for system's own goals

While it is difficult entirely to "design out" the threat to face, some of the examples have shown thoughtful attempts to do so, using strategies such as joking, self deprecation, apologies, blame-taking and so on, which are recognisable from the politeness literature as threat mitigation stratgies. Carroll [2009] describes the way that HCI has evolved and broadened its concerns: "inside HCI the concept of usability has been reconstructed continually and has become increasingly rich and intriguingly problematic. Usability now often subsumes qualities like fun, well-being, collective, efficacy, aesthetic tension, enhanced creativity, support for human development and may others" [2009]. We would suggest that politeness can usefully be added to this list of perspectives.

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