

# PERSONALIZATION IN INTERACTIVE SYSTEMS

## *The Generation of Compliance?*

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Keywords: Interactive Systems, Personalization.

Abstract: This paper examines applications of personalization in interactive systems and seeks to map success in this area into a general theory of database and narrative. It is argued that conventions of human communication established well before the digital age play a large part in determining user responses to personalization. The analysis offers a logic to help determine when to apply personalization. The results of an experiment to detect personalization effects are reported which provide evidence of the value of personalization.

## 1 INTRODUCTION

Today's interactive systems offer much scope for personalization and a range of personalization regimes have been implemented in different circumstances, with different technologies and with different objectives. Broadly, objectives of personalization strategies typically include improved ease of use and/or market effectiveness - see, for example, Karat, Brodie, Karat, Vergo & Alpert, 2003.

Customization approaches, in which users are able to alter the delivery of material, and adaptive techniques which 'learn' from user behaviour and adapt deliveries accordingly on the basis of some model of user behaviour both provide for a richer communication experience than can be achieved with conventional, old, media. It may be, however, that this richer experience is not always wanted: "25% of consumers actually avoid personalized websites because they fear that their personal information will be abused." (McGovern, 2003).

Whilst there is an extensive literature on how to personalize, customize and integrate adaptiveness into interactive systems (Harris, 2002) there is often the presumption that it is a good thing and if some observe that it can be expensive and difficult (McGovern, 2003) there is relatively little discussion of the overall logic for personalization or analysis of the situations in which it has been found to be effective, ineffective or, indeed, damaging.

Since Manovich (2001) published 'The Language of New Media' there has been much elaboration in the literature on the relationship between database and narrative in new media deliveries - see, for example, Broden, Gallagher and Woytek 2004. We also see the significance of narrative in software development being raised by the advocates of 'agile computing' - see Cohn, 2004.

The two-way flow of information enjoyed by interactive systems permits a direct linkage between databases and narratives and we can follow technical debates about the mechanical and architectural possibilities within such linkages (see, for example, Instone, 2004). There is little doubt that user interfaces can be improved enormously through a deep appreciation of user needs (narrative) in system development. This paper, however, seeks to argue that personalization in interactive systems represents the anticipation of narrative and however well it is done, and however sensitive it is to collected data there will be times when it is unwelcome to users - and times when users will find it essential.

Reported here are the results of an experiment in which regular users of an online forum exhibit significantly different behaviours when faced with personalized and non-personalized versions of a questionnaire. Users, in a familiar situation, were more likely to show 'compliant' responses when faced with a personalized version of a questionnaire.

Effective personalization - in terms of enhancing the user experience - may depend on the circumstances. Established communication

conventions outside the digital world may account for variations in effectiveness.

## 2 COMMUNICATION CONVENTIONS

In the context of the web we talk about users - not viewers, listeners or readers. We might talk about shoppers, clients, students, customers or collaborators. A web user may be any of these things at different times and at the technology level communication is always, essentially two-way - unlike television, radio or print media where reception is typically anonymous. In these latter media feedback is relatively loose, voluntary, limited in specificity, reliant on respondent honesty and subject to sampling error. According to Sobol (Sobol and Stones, 2002) "The web offers us more possibilities for data on real consumption patterns than any other medium before it...". There is much we can learn from careful analysis of these data mountains - but because we *can* do things does not mean that we *should*.

The communications technology that underlies the web might be necessarily two-way - but that is a matter for the devices involved and the protocols that marshal the data that flows between them. Human communication, on the other hand, takes place via narrative. Whole industries and professions have grown up which explicitly seek to convert data to narrative (market research, medical research, forensic science...) and back again (market strategy, medicine, the law...). Because, in the case of the web, the technical processes behind each conversion are so closely allied we run the risk of ignoring the established conventions of communication adopted by, for example, viewers (passive receivers) and, for example, customers (active participants in a transaction). The thesis is then that personalization strategies must take into account the communication role of the user.

Communication conventions evolve. Security cameras were once widely seen as a gross intrusion but have become an accepted part of modern living. If I have my newspaper delivered I know that I can't expect to keep my address secret from the newsagent - but if the vendor advises me to change my paper I am outraged. The technology involved in the transaction demands some participation from me - some information from me - but only enough to enable the sale. This is a data exchange. If I engage a lawyer, or a doctor, my participation levels - and

information supply - will, typically, be much higher and I will expect to receive advice and guidance tailored to my personal circumstances. These are narrative exchanges - and by the amount of information I give I 'authorise' a personal response.

Collaborative working on interactive systems has been found to be successful in circumstances where levels of 'shared goals', 'trust' and 'impact' are high (Stack, 1999; Sobol and Roux, 2004). It may be that personalization can achieve some of its objectives by accelerating development along these dimensions but also the level of personalization that users find acceptable may well be restricted by user scores on the same factors. Personalization will 'work' if the user submits, in principle, to guidance and recognises its authority. In these cases mechanical personalization may be able to steer a behaviour.

## 3 EXPERIMENTAL DESIGN

To explore these ideas users of a web-based discussion forum at the Institute of Communications Studies at Leeds University were given an online questionnaire to complete on entry to the system (The Forum). The system is used by staff and students.

Access to The Forum is by username and password - thus the system has the wherewithal to deliver basic personalization. Users are welcomed by name. Access to most discussion areas is restricted and users only see areas (and can only participate in areas) to which they have been granted access. The system features a choice of methods when it comes to entering a message. Users can either have a plain HTML text box or can elect to have a 'fancy text box' instead. The fancy text box allows users to alter font sizes and colours as well as apply bold and italic formatting. The resultant HTML code can sometimes cause problems when viewed in The Forum's talk areas. The system keeps track of a user's preference in this regard and delivers according to their last selection - always allowing them to change.

On arrival members see a screen which shows the most recent contributions *to the areas open to the user*. Because of the large number of talk areas on the system this can sometimes make the opening page slow to load.

So, the system includes a very basic level of personalization which does not prejudge - guess, or deduce user requirements - rather it 'remembers' and uses personal information (full name, email address) openly to facilitate communication. The volume of

traffic would indicate that users accepted the convenience benefit consequent on the supply of some personal information. A degree of trust has been built up. The talk areas often carry PowerPoint presentations used in lectures - providing 'impact' - and the talk areas foster collaborative work of various kinds which encourages the 'shared goals' perception. For these reasons it is argued that the system, however basic, has engaged users, to some degree, in a relationship consistent with established communication conventions in which the giving of personal information is done for a reason and the expectation of some return. If this is correct, and a level of trust has been built up, we might expect that trust to give some persuasive power to the system. If personalization can be used as a way of exercising that power and going beyond 'improved ease of use' to 'improved market effectiveness' then it ought to be possible to exercise that power in The Forum.

An online questionnaire was presented to all Forum users on and between Monday 14th February and Friday 18th February 2005. At random half of the users received a personalized version of the questionnaire - mentioning them by first name a total of five times. The other users completed questionnaires with no personalization. Users had to complete the questionnaire in order to proceed to 'The Forum' proper. An example of a personalized version appears below:

Hi there *Steve*, Forgive the intrusion but we would like your opinion. You once tried the 'fancy text box' and went back to the ordinary one. We'd like to remove the 'fancy text box' because it can cause problems with the web layout. What do you think?  
 *Steve* says leave it there as an option.  
 *Steve* says get rid of it.  
 Also, THE FORUM is slow to load. Mainly this is because of the *LATEST* feature on the first page which shows recent contributions in all areas. Do you think its worth the wait - or should we get rid of that feature?  
 *Steve* says leave it as it is.  
 *Steve* says get rid of the *LATEST* feature.  
 How would you feel about this system holding your examination marks so that only you could see them after logging in to the intranet?  
 Good idea. Very convenient - or other reason.  
 Bad idea. I'd be worried about someone hacking in to my private area - or other reason.  
 Do you think THE FORUM should be opened up to former students?  
 Yes.  No.

The first question - involving the phrase 'we'd like to...' is designed to test whether the personalization could be associated with compliant behaviour. Would those answering personal questionnaires be more likely to comply with the 'system's' desire to 'get rid of the fancy text box'?

The second question is not directly loaded - we might expect personalization to be less significant here. Remaining questions were not personalized in the expectation that any personalization effect would be reduced. The third question was designed to give a concrete indication of the level of trust that had been built up among users and answer a local need.

The fourth question relating to former students was, again, designed to answer a local need - but any reluctance to allow 'strangers' into the trusted zone might be seen as a measure of the strength of the relationship between the system and the user.

#### 4 RESULTS

A total of 234 responses were achieved over the five days. A crosstabulation of the responses to question 1 against the personalization variable is given below (expected values in parentheses) in Table 1. Those who got the 'personal approach' were more likely to exhibit compliant responses - i.e. to prefer the removal of the 'fancy text box'.

Table 1: Personalization and preferences for the 'fancy text box'.

	Stay as is	Get Rid	
Impersonal Q	71 (63)	49 (57)	120
Personal Q	51 (59)	63 (55)	114
	122	112	234

A chi-square analysis of this data applying Yates's correction reveals the table to be significant at 5% and the larger number of personalised questionnaires yielding 'get rid' answers than one would expect can be taken as evidence of a personalization effect generating compliance. The 63 users who received the personalized questionnaire and also voted to lose the 'fancy text box' is larger than the 55 that would have been expected by chance to the extent that there is only a 5% probability that the observed figures are the result of chance. Personalization in the question is significantly associated with compliance in the answer. Table 2 provides evidence of a personalization effect in respect of views on whether or not to admit alumni to the discussion area. Those

who received a personalized questionnaire were more likely to prefer the exclusion of alumni.

Table 2: Personalization and preference on the alumni question.

	Admit Alumni	Do not admit alumni	
Impersonal Q	93 (86)	27 (34)	120
Personal Q	74 (81)	40 (33)	114
	167	67	234

The table is significant at 5% - the personal approach is associated with the preference of barring alumni from the discussion areas. It appears that the personalization here has engendered a feeling for privacy in the relationship between the user and the system. The general notion of the importance of established communication conventions, involving the build up of trust, in web systems has been supported by the data. Further, we find that trust can be exploited through personalization.

It should be remembered that 'The Forum' is part of the day-to-day lives of the respondents. It provides information and discussion of immediate value (impact) to users and as such has built up a certain level of trust (those 'publishing' on the system rely on it to deliver) among people with shared goals. It may be that the personalization effects observed here are particular to such situations. In this sense 'earned' personalization may offer potential rewards whereas the unearned variety may have more risks associated with it. All of which would be consistent with the communication conventions outlined in section 2 above.

## 5 CONCLUSION

Web systems need to respect established communication conventions. Therefore as these change so should the systems - the web itself may change some conventions. In the same way that many of us now accept the principle of closed circuit television (in return for the security benefits) the convenience afforded by web-site personalization may become accepted, tolerated and even desired. And then assumed. Personalized mailings may once have won elections but are now barely noticed. It may be that interactive systems are currently enjoying a persuasiveness dividend by virtue of their youth, but the fundamental point relating to the give and take involved in the development of trust in a communication relationship remains. Personal

information used in web systems is likely to be most effective if that information would be used in a truly personal interaction.

In summary, this paper provides evidence of a personalization effect consistent with established protocols of human communication in which personalization reinforces an existing strong communication relationship.

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