

Addressing the Personalization Paradox in the Development of Electronic Commerce Systems

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ABSTRACT

Personalization is regarded as a de facto concept for developing electronic commerce services. However, personalization involves the personalization paradox: On the one hand, the use of personalization is advocated by the positive aspects it provides for users; on the other hand, the employment of personalization is seen to infringe users' rights in informational privacy, which may result in negative implications for business. Unfortunately, existing research does not offer concrete guidance for developers designing acceptable personalization for electronic commerce services. To fill this gap, this paper first outlines a theoretical framework consisting of two dimensions of acceptability – psychological and moral acceptability – for understanding the fundamental barriers preventing us from solving the personalization paradox. Secondly, a meta-guideline for developing imperatives for particular cases is derived on the basis of the theoretical framework. Thirdly, as an example of the use of the meta-guidelines, a set of imperatives for developing acceptable IS/SW is put forth. Finally, implications for research and practice are presented.

INTRODUCTION

Personalization, referring to the utilization of users' information in order to improve the interaction between customer and system (e.g. Brusilowsky, 2000; Kobsa, 2000) has been seen as a key concept in electronic commerce (Riecken 2000, Mulvenna et al. 2000; Singhal et al. 2001 p. 401). Not surprisingly, several methods for developing user-adaptive, or personalized, systems (Alatalo & Peräaho 2001; Koch, 2000, Ramakrishnan, 2000) have been proposed. However, on the one hand, personalization is seen to violate users' informational privacy

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(Kobsa, 2001, 2002), which may result in negative implications for business (Hoffman et al., 1999). On the other hand, non-utilizing of personalization may cause negative implications, as well. We label this dilemma the personalization paradox: if a system is not useful, usable, easy to use and cost-effective, it is hardly acceptable (e.g. Nielsen, 1993). However, for any user-adapted interaction to be effective and easy to use, e.g. for a system to give good recommendations (Schafer *et al* 1999) for purchases for a customer, it needs to have enough information on the user. In turn, personalization may lead to jeopardizing users' individual privacy. To our knowledge, these existing endeavours to develop user-adaptive, or personalized, systems do not address the personalization paradox, i.e. privacy and acceptability concerns seriously enough.

Even though Information Systems (IS) and computer ethics literature are rife with the debates on whether such activities (personalization) are unethical or not (cf. Moor, 1997; Lin & Lou, 1998), we do not find any studies providing concrete help for practitioners aimed at developing morally and psychologically acceptable systems, excluding² (Kobsa, 2002). However, the existing criteria (Kobsa, 2002) offer some clear practical guidance, but unfortunately it lacks the solid theoretical foundations on which one can build practical guidelines, and presents intuitional *prima-facie* (cf. Ross, 1930; Hare, 1981) principles. Perhaps due to the lack of deep theoretical foundations with respect to the existing approaches, we see that they fail to recognize the constituent components of the personalization paradox. Furthermore, as research on philosophy indicates, intuitional *prima-facie* approaches – laying down a certain predefined set of principles – for tackling the issue are problematic, as a) with prefixed principles it is impossible to cover all existing and forthcoming situations; b) without a theoretical foundation it is impossible to scrutinise the validity of each principle (e.g. Hare, 1981). To give an example of such problem with intuitional *prima-facie* approaches (such as the one Kobsa, 2002), it has been shown that personalization could be used by sellers to set the prices according to estimates of what the customer is willing to pay, leading to unfair discrimination (Grover & Ramanlal 1999, Schafer *et al* 1999,). Also, in recommendation systems that are a common personalization feature in e-commerce (Schafer *et al* 1999), the actual recommendations based on user interests can be overridden by business rules, to e.g. promote sales of certain items (Fink & Kobsa, 2000). However, the *prima-facie* approaches (Kobsa, 2002) consisting of predefined principles are unable to address such problems.

The aim of this study is to sketch a solid theoretical foundation and, on the basis of this foundation, lay down imperatives for developing acceptable (personalized) IS, that can be used to complement existing design/development approaches. In order to accomplish this, we see it imperative to provide a meta-guideline. With the help of this meta-guideline one can form practical guidelines for different situations.

² To be exact, that paper addresses legalities, not moralities

The rest of this paper is composed as follows: the second section presents the theoretical framework for acceptable personalization. Based on the framework, the meta-guideline is sketched. As an example of the use of this meta-guideline, a set of imperatives for design are presented in the third section. Then in the discussion, the implications and the limitations of the findings of this paper are discussed. Finally, the key outputs of this study are summarized in the conclusions.

THEORETICAL FRAMEWORK FOR META-GUIDELINES

We see that acceptability encompasses psychological and philosophical dimensions, the first being about psychological acceptability, whereas the second concerns moral acceptability. To increase our understanding of these two dimension, we may broadly state that psychological acceptability refers to a) the degree of a person’s acceptance to an overall system or its features; b) the person’s motivation to utilize and comply with the intended use of the system. Moral acceptability, albeit it overlaps in some respect with the psychological acceptability, denotes whether the use of a system or a service is deemed to be morally praiseworthy. A separating factor of psychological acceptability and moral acceptability is that moral acceptability can be resolved by a philosophical enquiry without solely appealing to facts (Hare, 1964; 1986; Popper, 1948), whereas psychological acceptability can be studied on the basis of factual empirical studies (cf. Hare, 1952).

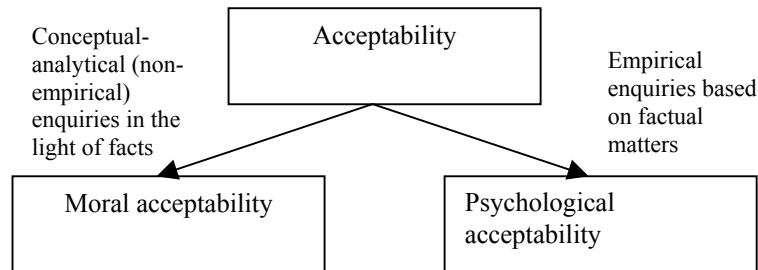


Figure 1. Two dimensions of acceptability.

The theoretical framework for moral acceptability

The moral dimensional acceptability is important by virtue of the fact that informational privacy is seen as a concept having special value. It has been debated what is the value associated to privacy *per se*. In this respect, Rachel (1997) sees that privacy has an instrumental value as it is necessary in enabling social life. We have different roles in our society and privacy makes the roles possible. Johnson (1994) in turn suggests that privacy is has an intrinsic value for our autonomy. The view of Floridi is similar to this. For Floridi (1998, 1999), privacy is part of “me-hood”. He sees that the nature of information is irrelevant with respect to considering whether something is private or not. Yet, whenever a violation of privacy takes place, the question is not a violation of consequences or

categorical imperatives or maxims, but a neglect of one's moral respect s/he should enjoy. This results in Floridi viewing a violation of privacy as a violation of one's me-hood: information private to me is spread about and it is not anymore under my control. This implies that a violation of privacy in Floridi's scheme is also a violation of our integrity, as it debars one from being as an autonomy entity. A third possibility is to argue that privacy is one of the core values, such as freedom and security, which are necessary for a human life (Moor, 1997).

To decide when a violation of privacy takes place the literature agrees with the importance of the concept of "informed consent" (Lin & Lou, 1998) also called the "publicity principle" (Moor, 1997). According to this definition, a violation of privacy is avoided by the permission of the holder of the information. It is also required that the object of this question understands the question and is a free to make decisions. Even though this principle can be regarded as self-evident, it can be rationalized through ethics theories, as well. To illustrate this, we shall provide a examples from the viewpoint of universality thesis, which is a key concept in many ethical, socio-political and theological doctrines such as in Rawls' (1971), Gewirth's (1978; 1982: 1996), Kantian ethics (Kant, 1993), Jewish-Christian's ethics (e.g. the Golden Rule in the case of Christian ethics: "One ought to treat others as one would wish them to treat oneself" (Hare, 1963), Confucian ethics: "What you do not desire, do not inflict on others" (Hansen, 1991), Hare's (e.g. 1981) universal prescriptivism and Mackie's (1981) approach. It means that when considering whether an action in a particular situation is right, one must ask whether one would accept it as an universal moral law, i.e. also everybody could for the same action in the same situation. In other words, the thesis means that if one judges that one's action in a particular situation is right, one must acknowledge that a similar act by anybody else in a similar situation would also be right. In the light of the universality thesis, we see clearly that people at large do not want that their 'private' information could be violated without asking their permission; do you rather want that when one somehow finds out "your private information", and wants to publish it on the Internet (or utilize otherwise), the person asks your permission on that matter?

The theoretical framework for psychological acceptability

With regards to psychological acceptability, the intrinsic motivation by Deci (1975) and Deci & Ryan (1985), the theory of planned behaviour (TPB) by Ajzen (1991) and technology acceptance model (TAM) by Davis (1989) have been selected as a theoretical framework.

Table1
Five principles for construction of security guidelines.

Selected theories	Key aspects
A theory by Fishbein & Ajzen (1975); Theory of planned behaviour TPB (Ajzen, 1991)	Intention leads to behaviour. Intention consists of attitude, subjective norms (Fishbein & Ajzen, 1975) and perceived behavioural control (Ajzen, 1991).
Intrinsic motivation (Deci, 1975; Deci & Ryan, 1985)	Intrinsic motivation: Self-determination
The Technology Acceptance Model (Davis, 1989)	System use depends on behavioural intention to use, which consists of usefulness and ease of use.

The theories by Fishbein & Ajzen (1975) and Ajzen (1991) are based on the assumption that intention immediately leads to behaviour (Fishbein & Ajzen, 1975, p. 16). Intention is divided into 1) "attitude toward behaviour" and 2) "subjective norm concerning behaviour". Ajzen (1991) has further developed the theory of planned behaviour, in which there is a third element "perceived behavioural control" (Ajzen, 1991 p. 182) and the latter theory will be applied herein. Attitude (1) consists of beliefs about the consequences of behaviour, and (2) subjective norm consists of (2a) normative beliefs and (2b) motivation to comply (Fishbein & Ajzen, 1975, p. 16). The third element, the concept of "control beliefs and perceived facilitation" by Ajzen's (1991) theory of planned behaviour refers to "people's perception of the ease or difficulty of performing the behaviour of interest" (Ajzen, 1991, p. 183). According to the technology acceptance model (TAM) by Davis (1989), system use depends on the behavioural intention to use. Behavioural intention consists of an attitude towards the use that is divided into two components 1) "perceived usefulness" and 2) perceived "ease of use". Achieving practical usefulness in terms of TAM requires – somewhat similarly to TPB by (Ajzen, 1991) – that the consequences of executing security guidelines must be desirable in the eyes of the users. Also, the "perceived ease of use" (2) is similar to TPB's "perceived behavioural control". "Attitude" in terms of TPB and "perceived usefulness" in terms of TAM are components that particularly need to be satisfied by the proper education strategy. The key issue of whether the user is intrinsically motivated is self-determination (also self-esteem has been widely acknowledged as having an effect in this respect e.g. Deci & Ryan, 1980). In other words, in the case of intrinsic motivation users need to feel free to make their own choices concerning their behaviour.

We inferred the following meta-imperatives for designing electronic commerce services from the theoretical framework outlined (table 2).

Table 2. Imperatives for designing acceptable electronic commerce services

IMPERATIVES	BRIEF DESCRIPTION
Imperative of treating users as an end, not purely as a means for something	Users should not be treated purely as a means for business
Imperative of universalizability	All actions must be universalizable
Imperative for ease of use	The easy of use of services should be maximised

1. *Imperative of treating users as an end, not purely as a means for something.* This directly stems from Kant's (1993) categorical imperative.
2. *Imperative of universalizability* originates from the universality thesis outlined above.
3. *Imperative for ease of use* stems from the psychological framework presented;

AN EXAMPLE OF THE USE OF A META-GUIDELINE: IMPERATIVES FOR DESIGNING ELECTRONIC COMMERCE SERVICES

To illustrate the use of the meta-guideline, we propose the following imperatives as an example of the set of imperatives formulated on the basis of the meta-guideline. From the first (imperative of not using users as a means only, but as an end) and second (imperative of universalizability) meta-guideline, the following kinds of concrete imperatives may be derived.

- A. follow the principle of informed consent by allowing users full autonomy over their information – ask users what information they want to hand over;
- B. do not sell, give away or otherwise compromise to third parties any users' (private) information without the application of the principle of informed consent;

As mentioned in the second section, from the point of view of the universalizability thesis we presume that most of us rather want to have control over our private information. In other words, in generally speaking we do not want that anyone could distribute our private information without our permission. In the same vein, we do not want that anyone could sell our private information without our acceptance. Yet, a company selling one's private information, violating the principle of informed consent to gain profit, is likely use users (and their information) as means for achieving business without recognizing users' end such as autonomy.

- C. respect users' autonomy in deciding what services and platforms (e.g. software) users want to use;
- D. privacy preferences should not imply inequality in services (all users, irrespective of their preferences with respect to privacy matters, should be equally served);

In order to respects users' (cf. The second meta-guideline) ends, it is imperative to allow users autonomy including the services and platforms they want to use. Moreover, in the light of the universalizability meta-guideline, would you rather want to retain autonomy in deciding what services and platforms you want to use than that other people make such decisions irrespective of your preferences.

To allow equal service for all users irrespective of their "privacy preferences" is a good way to recognizing users' ends. Perhaps most of us would also agree as an universal law that our privacy preferences should not cause discrimination in services.

- E. The ease of use of services should be maximised (without violating other imperatives);
- F. Privacy preferences should not decrease the user's perceived ease of use of the service;

Considering the third meta-guideline – imperative of ease of use – the two imperatives above (E and F) may be formulated.

Next to further demonstrate the application of this solution, a few existing practices are scrutinized in the light of the imperatives just formed (A-F).

A. *Informed consent*: This principle is currently violated by e.g. Web browsers/services, where so-called cookies are used by default, thereby potentially handing out information about the user without consent (as often the users do not even know the existence of the cookies). Similarly personalization functionality has been bundled in other application software and operating systems too. Another, perhaps bigger and more problematic, violation is the business practices, where the businesses collect personal information about people (their customers), who have no control of that data. As in countries such as Finland this kind of practice is outlawed, businesses routinely invite their customers to join a club to enjoy membership benefits, in the form of e.g. discounts or free offers. Thereby the users/customers full autonomy is questioned, as monetary incentives are used to encourage the legitimisation of the gathering of personal information (privacy is for sale). Offering a personalized service can be used as such an incentive as well. A related common problem with informed consent are the agreements, where the user supposedly gives his/her consent by clicking a button, although the contents of the agreements are rarely read, and even when they are, the legalities are not easily understood.

B. *Compromising to third parties*: E.g. selling of people's information personal information is also outlawed in many countries. However, there have been severe violations in Europe too by the most worrying parties, when medical information of the population has been given to third parties without consent (Mathur, 2001).

C. *User's autonomy*: One evident case where users' autonomy in deciding what platforms to use is not respected is that of operating systems (Weiss, 2001). For example, the use of Linux may sometimes be impossible when some services are not available. This is often related to file formats. Actually, as the submission of this paper to the proceedings requires using the Microsoft Word format, which is a closed format that is made difficult to be handled by other vendors' software (a lock-in strategy), the procedure acts as an example violation of this imperative. Regarding personalization, the on-going debate on so-called Single Sign-on systems, where the danger of lock-in practices exists too, are relevant as there the question is basically to whom the users/consumers trust their personal information and, consequently, whose platform and services will be used (potentially excluding others) for identification and personalization.³

D. *Privacy leading to inequality*: Also this imperative is violated by current practice related to cookies on the Web. Several services require cookies to be set on – otherwise no access is provided (the technical solutions are often so that the site simply does not function without cookies). As the cookie configuration in Web browsers is derived from privacy preferences, this is a clear violation of the imperative D. Price discrimination can be seen as another kind of a violation of this imperative, e.g. if special offers are excluded from customers who decline from giving personal information.

E. *Ease of use maximised*: As reasoning about other's beliefs is reasoning under uncertainty (Jameson, 1995), personalized recommendations are always based on partial information, and may therefore fail to maximise easy of use. Let us illustrate this with an anecdotal true story: A person, who works as a server administrator for unix-like systems, frequently reads books about related issues, using an on-line bookstore for information on new publications, reading reviews and doing the actual purchases too. As it happens, many administrators of unix-like systems nowadays are fond of Linux, of which a lot of books are written about and bought. However, this person dislikes Linux, and does not use it at work. Despite this, the bookstore system keeps recommending Linux books, based on social filtering. In this case, the person got really frustrated and almost quit using the service (and hence buying books from that store) – eventually

³ For up-to-date information, see the home sites of the competing products, i.e. <http://www.passport.com/> for Microsoft's .NET Passport, and <http://projectliberty.org/> for the rival Liberty Alliance, founded by several technology and service companies. Do note that it is yet controversial whether such centralized identification systems are needed, or wanted, at all.

ending up spending a considerable amount of time and effort teaching the system so that it finally ceased from recommending Linux books. In this case ease of use was hardly maximised. Such problems might be avoided with more information about the user's interests, but it is just then when the privacy issues rise and we again meet the personalization paradox this paper addresses.

F. Privacy preferences not to decrease ease of use: This imperative is actually similar to D (preferences and inequality), but from a different angle, emphasizing ease of use (contra e.g. content or price of the service). A related example to the cookie one that was given in D would be a system that would be accessible even without cookies but only so that the use would be cumbersome (e.g. requiring extra actions).

DISCUSSION

Although management information systems literature is rife with possibilities offered by personalization, its full business potentials are threatened by the personalization paradox. This paradox refers to the dilemma between the morally and psychologically negative consequences raised by the use and non-use of personalization. To understand the fundamental elements with respect to the personalization paradox, a theoretical framework encompassing two dimensions (psychological, moral) were first put forth.

Secondly, a meta-guideline, on the basis of the framework, were formulated. Then to illustrate the application of this meta-guideline a set of imperatives was put forth. We argue that the imperatives derived here are an example of a good guideline when aiming at a morally acceptable personalized system.

However, when developing a personalized e-commerce service, the business strategy of an organization cannot be purely stemmed from moral guidelines. Rather business objectives set the strategy employed and practical goals to follow. However, a commercially successful service has to be, in the end, acceptable by the users (customers), fulfil other requirements such as the law, and withstand moral scrutiny. Hence, in order to explore how real-world business concerns and the guidelines outlined can be integrated smoothly, further work is required. Particularly theory-testing research (cf. Järvinen, 1997; 2000) to obtain information on the practical usability and applicability of these imperatives to overall IS/SW/service development processes in real life settings are needed. It is anticipated that mechanisms for finding the right balance between effective personalization and acceptable privacy policies will be required. Action research is argued to be a prominent methodology for such theory-testing purposes (Avison et al., 2001; Baskerville, 1999; Baskerville & Pries-Heje, 1999; Baskerville & Wood-Harper, 1996; Baskerville & Wood-Harper, 1998; Mumford, 2001).

A further limitation of this study is the somewhat narrow treatment of the overall concept of acceptability. Especially e.g. the costs for the user and practical effectiveness are only addressed here indirectly. An influential conceptualisation

of acceptability, defining the relationships of e.g. costs for the user and usefulness that further consists of utility and usability, has been put forth by Nielsen (1993). While acknowledging the value there (the role of usability in acceptability), we depart from Nielsen's higher level definition of overall acceptability, considering the categorical division into social and practical acceptability confuse (social can be practical as well, and vice versa). As an alternative, the categorization into moral and psychological dimensions of acceptability was presented in section 2. Also, the incompleteness was addressed by forming meta-guidelines that can be used to derive practical imperatives. Whether and how this approach actually helps to meet the variety⁴ of issues that create acceptability remains to be seen.

In addition to business practices, the acceptability of personalized systems comes down to technological solutions, too. For example, the P3P Web standard for privacy preferences has been identified as a potential technology to address the personalization paradox (Kobsa, 2002). Another route is the possibility of anonymised/pseudonymised personalization by means of cryptography or other technical means (Arlein *et al.*, 2000; Chaumin, 1981; Reiter & Rubin, 1998; Rubin & Geer, 1998; Schreck, 2000). An early attempt to "further commerce and services on the Internet while enhancing personal privacy" was the Open Profiling Standard (OPS), proposed to become a Web standard by browser makers and personalization companies (Netscape-Firefly/W3C 1997). In OPS the idea was that the user's personal information would reside in the browser, e.g. in his/her own control. Similar ideas are implemented and discussed often nowadays too but, like all technical solutions, remain problematic and should be critically reviewed. In fact, the framework and meta-guidelines presented in this paper is useful in this respect, too.

Finally, the question of handing out private information becomes one of trust. If a business complies with e.g. the imperatives presented here, and thus can be argued to perform in an acceptable manner, how is that communicated to the users/consumers? Besides privacy policies, businesses have utilized a kind of certificate in the form of labels on Web pages. But there the danger is that such labels do not necessarily guarantee anything, and can thus be used for whitewash, i.e. to cover up the actual private information gathering practice⁵.

⁴ Acceptability of new technologies may even involve fashion: e.g. whether a (young) person desires a feature, such as personalization, for his/her mobile phone ("personal trusted device") may depend on how that effects the social status (Ruuska-Kalliokulju *et al.* 2001). Although the imperatives here do not address such issues, the underlying framework covers it by recognizing subjective norms (Fishbein & Ajzen, 1975). How people may act out of habits, i.e. they may change e.g. their software as other are doing it too, has been studied in e.g. (Dunlop & Kling, 1992; Rogerson, 1996; Siponen, 1998).

⁵ This has reportedly been done with leading TRUSTe label, see <http://slashdot.org/yro/99/11/05/1021214.shtml> by Jamie McCarthy. Regarding

CONCLUSION

Personalization is regarded as a de facto concept for developing electronic commerce services. However, the use of personalization may entail the personalization paradox. On the one hand, without personalization systems' usability may decrease. On the other hand, slapdash use of personalization is seen to infringe users' right on informational privacy, which also may decrease use. To address this gap in research, this paper has first outlined an acceptability framework, and secondly, derived a meta-guideline from this framework for designing systems and services that users would accept. The use of these meta-guidelines are illustrated with a set of practical imperatives. Future research to obtain information on the practical usability and applicability of these imperatives to overall IS/SW/service development process in real life settings is needed.

REFERENCES

- Ajzen, I., (1991), The Theory of Planned Behavior. *Organizational Behavior and Human Decision Processes*. 50, pp. 179-211.
- Alatalo, T. & Peräaho, J. (2001). A Modelling Method for Designing Adaptive Hypermedia. A position paper in the Third Workshop on Adaptive Hypertext and Hypermedia, the User Modelling 2001 session.
- Arlein, R. M., Jai, B., Jakobsson, M., Monroe, F., Reiter, M. K. (2000) Privacy-preserving global customization. *Proceedings of the 2nd ACM conference on Electronic commerce 2000*, Minneapolis, Minnesota, United States.
- Avison, D., Baskerville, R., Myers, M., (2001), Controlling action research projects. *Information Technology & People*, vol. 14, no. 1, pp. 28-45.
- Baskerville, R. & Wood-Harper, A.T., (1996), A Critical Perspective on Action Research as a Method for Information Systems Research. *Journal of Information Technology* 11, 1996, pp. 235-246.
- Baskerville, R. & Wood-Harper, A.T., (1998), Diversity in Information Systems Action Research Methods. *European Journal of Information Systems* 7 (2), pp. 90-107.
- Baskerville, R. & Pries-Heje, J., (1999), Grounded Action Research: A Method For Understanding IT in Practice. *Accounting, Management and Information Technologies*.
- Brusilovsky, P. (2001), Adaptive Hypermedia, *User Modeling and User-Adapted Interaction*, 11(1/2): 87-110, 2001
- Chaum, D., (1981), Untraceable Electronic Mail, Return Addresses, and Digital Pseudonyms. *Communication of ACM*. February.
- Davis, F., (1989), Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, Vol. 13, no. 3, September, pp. 319-340.

such certification in EU, and the questions of auditing, see e.g. <http://www.droit.fundp.ac.be/crid/eclip/workshop/debaere/>

- Dunlop, C., Kling, R., (1992), Social Relationships in Electronic Commerce - Introduction. In Computerization and Controversy - Value Conflicts and Social change, (Ed. Dunlop C. and Kling R.), Academic Press, New York, USA.
- Fink, J. and A. Kobsa (2000): A Review and Analysis of Commercial User Modeling Servers for Personalization on the World Wide Web. User Modeling and User-Adapted Interaction 10(3-4), Special Issue on Deployed User Modeling, 209-249. <<http://www.ics.uci.edu/~kobsa/papers/2000-UMUAI-kobsa.pdf>>
- Fishbein, M. & Ajzen, I., (1975), Belief, Attitude, Intention and Behavior: An Introduction to Theory and Research. Addison-Wesley, reading, MA.
- Floridi, L., (1998), Does Information have a Moral Worth in Itself? Computer Ethics: Philosophical Enquiry (CEPE'98), in Association with the ACM SIG on Computers and Society, London School of Economics and Political Science, London, 14-15 December.
- Floridi, L. (1999), Information Ethics: On the Philosophical Foundation of Computer Ethics. *Ethics and Information Technology*. Vol. 1, No. 1, pp. 37-56.
- Grover, V. & Ramanlal, P. (1999), Six Myths of Information and Markets: Information Technology Networks, Electronic Commerce, and the Battle for Consumer Surplus. *MIS Quarterly*. Volume 23, Number 4.
- Hansen C. "Classical Chinese ethics" in Singer P. (Ed.) *Companion to Ethics*, Blackwell, 1991.
- Hare, R. M., (1952), The Language of Morals. Oxford University Press, Oxford, UK.
- Hare, R. M. (1963), Freedom and Reason. Oxford University Press.
- Hare, R.M., (1964), The Promising Game. *Revue Internationale de philosophie* 70.
- Hare, R. M., (1981), Moral Thinking: its levels, methods and point. Oxford University Press, UK.
- Hare, R.M., (1986), A Reductio ad Absurdum of Descriptivism. *Philosophy in Britain Today*. edited by S. Shanker. Croom Helm, London, UK.
- Hare, (1997), A Taxonomy of Ethical Theories. In R.M. Hare (eds): *Sorting out Ethics*. Oxford University Press, UK.
- Hirsh, H., Basu, C. & Davison, B. 2000. Learning to Personalize. *Communications of the ACM*. Vol. 43, no. 8., 102-106.
- Hoffman, D.L, T.P. Novak, and M.A. Peralta (1999), "Information Privacy in the MarketSpace: Implications for the Commercial Uses of Anonymity on the Web," *The Information Society*, Volume 15, Number 2, April-June, 129-140.
- Jameson, A. (1995) Logic Is Not Enough: Why Reasoning About Another Person's Beliefs Is Reasoning Under Uncertainty. In A. Laux & H. Wansing (Eds.), *Knowledge and belief in philosophy and artificial intelligence* (pp. 199-229). Berlin: Akademie Verlag.
- Johnson, D. G., (1994), Computer Ethics, second edition, Prentice Hall. Upper Saddle River, New Jersey, USA.
- Järvinen, P., (1997), The new classification of research approaches. The IFIP Pink Summary – 36 years of IFIP. Edited by H. Zemanek, Laxenburg, IFIP.

- Kant I. *The Moral Law: Groundwork of the Metaphysics of Morals*, Routledge, London, 1993.
- Kobsa, A. (2002): Personalized Hypermedia and Privacy. To appear in the Communications of the ACM, Special issue on Adaptive Hypermedia Systems. Draft <<http://www1.ics.uci.edu/~kobsa/papers/2002-CACM-kobsa-draft.pdf>>
- Kobsa, A. (2001): Tailoring Privacy to Users' Needs (Invited Keynote). In M. Bauer, P. J. Gmytrasiewicz and J. Vassileva, eds.: *User Modeling 2001: 8th International Conference*. Berlin - Heidelberg: Springer Verlag, 303-313. <<http://www.ics.uci.edu/~kobsa/papers/2001-UM01-kobsa.pdf>> "© Springer Verlag. The original publication is available on LINK at <http://link.springer.de>".
- Koch, Nora (2001) *Software Engineering for Adaptive Hypermedia Systems: Reference Model, Modeling Techniques and Development Process*. PhD Thesis, Ludwig-Maximilians-Universität München, Institut für Informatik
- Kukathas, C. & Pettit, P., (1990), *Rawls - A Theory of Justice and its Critics*. Stanford University Press, California, USA.
- Kramer, J., Noronha, S. & Vergo, J. 2000. A User-Centered Design Approach to Personalization. *Communications of the ACM*. Vol. 43, no. 8., 45-48.
- Ladd, J., (1982), Collective and Individual Moral Responsibility in Engineering: Some Questions. *IEEE Technology and Society Magazine*, vol. 1, no. 2, pp. 3-10.
- Ladd, J., (1989), Computers and Moral Responsibility: A Framework for an Ethical Analysis. In: *the Information web: ethical and Social Implications of Computer Networking* (eds.): C. Gould. Pp. 207-227.
- Lin, D. & Lou, M., (1998), Taking a byte out of cookies: privacy, consent and the web. *ACM Computers & Society*. Vol. 28., No. 2. June.
- Mackie J.L *Ethics, Inventing Right and Wrong*, Penguin Group, London, 1981.
- Mathur, A. (2001) *World Health and the International Economy: The impact of information technology and telematic connectivity on designs of cross-border trade in healthcare services*. Invited paper by the Indian Council for Research on International Economic Relations as a contribution of Working Group Number 4 on Health and the International Economy to the World Health Organization (WHO).
- Mobasher, B., Cooley, R. & Srivastava, J. 2000. Automatic Personalization Based on Web Usage Mining. *Communications of the ACM*. Vol. 43, no. 8., 142-151.
- Moor, J. H., (1995), What is Computer Ethics. In: *Computers, Ethics & Social Values*. Edited by D.G. Johnson & H. Nissenbaum. Prentice Hall, New Jersey, USA.
- Moor, J., (1997), Towards a Theory of Privacy in the information age. *ACM Computers & Society*, Vol. 27, No. 3. September.
- Mulvenna, M., Anand, S. & Büchner, A. 2000. Personalization on the Net using Web Mining. *Communications of the ACM*. Vol. 43, no. 8., 123-125.
- Mumford, E., (2001), Action Research: Helping Organizations to Change. In: E.M. Trauth (ed): *Qualitative Research in IS: Issues and Trends*, Idea Group Publishing, pp. 46-77.
- Netscape-Firefly/W3C (1997). Proposal for an Open Profiling Standard. <http://www.w3.org/TR/NOTE-OPS-FrameWork.html>

- Nielsen J. (1993) Usability Engineering. Academic Press, San Diego, CA.
- Popper, K., (1948), What can Logic do for Philosophy? Aristotelian Society, Supplementary Vol. XXII.
- Rachel, J., (1997), Why Privacy is important. Computers, Ethics and Society. Second Edition, edited by M. D. Ermann, M. B. Williams & M. S. Shauf. Oxford University Press, UK, 1997.
- Reiter, M. & Rubin, A. D., (1998), Crowds: Anonymity for web Transactions. ACM Transactions on Information and System Security. November, Vol. 1., No. 1.
- Rubin, A. W. & Geer, D. E., (1998), A Survey of Web Security. IEEE Computers. September.
- Ramakrishnan, N. (2000), PIPE: Web Personalization by Partial Evaluation. IEEE Internet Computing, Nov-Dev. 2000
- Rawls J. *A Theory of Justice*, Oxford University Press, London, 1971.
- Riecken, D. 2000. Personalized Views of Personalization. Communications of the ACM. Vol. 43, no. 8., 27-28.
- Ruuska-Kalliokulju, S., Schneider-Hufschmidt, M., Väänänen-Vainio-Mattila, K. and Von Niman, B. (2001) Shaping the Future of Mobile Devices. Results of the Workshop on Future Mobile Device User Interfaces at CHI 2000. SIGCHI Bulletin, Vol.33 No.1, January/February 2001.
http://www.acm.org/sigchi/bulletin/2001.1/mobile_cont.pdf
- Rogerson, S., (1996), "The Ethics of Computing: the First and Second Generation" The Business Ethics Network News, Issue 6.
- Schafer, J. B., Konstan, J., Riedl, J. (1999) Recommender Systems in E-Commerce. Proceedings of the ACM Conference on Electronic Commerce (EC-99). Denver (CO): ACM. Pp. 158-166.
<http://www.cs.umn.edu/Research/GroupLens/ec-99.pdf>
- Schreck, J. (2001) Security and Privacy in User Modeling. PhD thesis, Dept. of Mathematics and Computer Science, University of Essen, Germany, 2001.
 <<http://www1.ics.uci.edu/~kobsa/phds/schreck.pdf>>
- Singer P. (Ed.) *A Companion to Ethics*, Blackwell, 1991.
- Siponen, M.T., (1998). The Dimensions of IT Ethics Awareness. Proceedings of The first FAST IEEE Student Conference on CS and IT. FISC '98, 23 - 24th October, 1998 at FAST ICS, Lahore, Pakistan.
- Siponen, M.T., (2001), "The Relevance of Software Rights: An Anthology of the Divergence of Sociopolitical Doctrines" *AI & Society*, vol. 15, no. 1&2, pp. 128-148.
- Weiss, A. (2001) The last word: Confessions of an OS polygamist. netWorker: The Craft of Network Computing, Volume 5, No. 3 (Sep. 2001).