On IS Students' Intentions to Use Theories of Ethics in Resolving Moral Conflicts

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ABSTRACT

It is widely agreed that ethics teaching should have an important role in Information Systems (IS) teaching. Yet, there are no studies exploring how students apply theories of ethics in their decision-making. This is unfortunate, because teaching ethics is of little practical use if the students do not utilise the acquired knowledge in practice. In order to bridge this significant gap in the literature, we introduced IS students to the following theories: utilitarianism, Kantian ethics, virtue ethics, prima-facie principles, and Rawls' veil of ignorance. We then asked them (n=75) to apply these theories to a given moral conflict, and to assess whether they intended to use the theories in real life. Phenomenographic analysis revealed four developing levels in the students' perceptions: 1) rejection (the student trusts his or her intuition, consciousness or feelings rather than the theories); 2) latent use (the student recognizes that the theories may be latently present in intuitive deliberation); 3) conscious use (the student uses the theories to support intuitive deliberation); and 4) internalised use (the student has internalised the theories to such an extent that he or she does need to consciously steer his or her deliberation to their use). These findings entail recommendations to IS educators on how to educate students to address ethical issues through the application of theories.

Keywords: ethics teaching, ethics theory, information systems education

1. INTRODUCTION

Analytical and critical thinking on matters of ethics and professionalism (e.g., codes of conduct and ethical theory) has been recognised as an important aspect of IS education (Gorgone et al., 2002). As a result, a number of conceptual frameworks have been proposed (e.g., Davison, 2000; Dyrud, 2002; Martin & Huff, 1997; Tavani, 2001). At the core of any such framework lie theories of ethics. Anyone teaching these theories to IS students should understand to what extent they intend to use them in real-life moral conflicts. Having said this, we find no studies purporting to address this relevant issue. In fact, the process of decision-making is rarely touched on in research on computer ethics (Adam, 2000). Our aim is to fill this gap in the knowledge by investigating the perceived applicability of the theories in ethical decision-making. Consequently, we studied IS students' application of five such theories (utilitarianism, Kantian ethics, virtue ethics, prima-facie principles, and

Rawls' veil of ignorance). We asked the students to apply the theories to a given moral conflict and to think about whether they would use them in real life.

This paper is organised as follows. The second section presents the theoretical framework, the third describes the research design and the phenomenographic method used, and the fourth presents the results. The fifth section discusses the limitations and the significance of the findings, and the sixth concludes the paper with a summary of the key points.

2. THEORETICAL FRAMEWORK

This section reviews different theories of ethics, and illustrates their applicability to a real-life moral conflict.

The various theories of ethics include utilitarianism (Bentham, 1876; Mill 1895), universal prescriptivism (Hare, 1981), Kant's theory (1993), emotivism (Stevenson, 1944), intuitionism (Ross, 1930), and virtue ethics. Of these we chose to focus on utilitarianism, virtue ethics, intuitionism

(Ross' prima-facie principles), Kant's ethics and Rawls theory of justice ("veil of ignorance"). Following Hare (1981), we consider intuitionism and emotivism similar in terms of their practical application. Emotivism suggests that moral utterances are the expression of emotions, while intuitionism holds that our intuitions guide our moral decisions. Neither of these theories offers any methodological support for finding out moral decisions that go beyond emotions or intuitions. Rawls' "veil of ignorance" also bears some resemblance to Hare's (1981) method of 'universalizability of moral judgements' for deciding moral principles (Hare; in Mautner, 1996 p. 177). Hence, we omit Hare' method.

These selected theories also represent the major traditions in ethics (Raphael, 1994), and therefore offer students a variety of thinking tools together with knowledge of the major ethical principles. We introduce them below, with exemplary applications to the following case reported by a computer professional to one of the authors:

"I work as the head administrator of a server and some users contacted me wondering why the mailbox reading times had magically changed during the night. Because I was unable to find any sensible reason, I spied on the other administrators to find out what they were up to. I found the culprit, an acquaintance, who was 'peeking' at girls' mailboxes. I know that the person is a harmless nerd who, in my judgment, would not abuse any information he obtained. What should I do?"

Utilitarianism: Jeremy Bentham (1748-1832), the founder of utilitarianism, argued that the important issue in resolving moral conflicts was the maximization of utility. The key idea behind this is the concept of 'felicity' (happiness), which he describes as a combination of 'pleasure' and 'the absence of pain'. In other words, utilitarianism holds that an act that produces the greatest happiness for the greatest number of people, measured in terms of 'pleasure' and 'the absence of pain', is a morally right action. Applying utilitarianism to the above example, it is a question of which alternative would produce the greater increase in happiness (and pain): disclosing the administrator's behaviour to the users or refraining from doing so and having a serious discussion with him. If disclosing the act to the users produces more pain for them and for the administrator, then the act of refraining from disclosing and having a serious discussion with the administrator is acceptable. A common criticism levelled against utilitarianism concerns whether we should take into account short-term or long-term results, and if we take the long-term view how long a period of time we need to cover. In this case, refraining from disclosing the act and having a serious discussion might not stop the administrator's future peeking acts, whereas disclosing the act and giving a formal warning might prevent future wrongdoings. Indeed, it would be difficult to see and calculate the long-term implications of either alternative.

Kant's ethics: The key aspect of Kant's moral theory is his categorical imperative. This consists of two maxims: act only on maxims that you would want to be universal laws (the thesis of universality), and always treat other people as an end, never only as a means (the rule of human dignity). The first rule means simply that one should act as if one were legislating for everyone. Thus, when you are considering whether an action is right or wrong you should ask yourself if you would want everyone to act in that way. The second rule refers to human dignity. Raphael (1994) stresses that "merely as a means" is the way in which we generally treat people, although there is nothing necessarily wrong with that idea. A simple example serves to illustrate how Kant's universality thesis can be applied to the head administrator's case. When the administrator peeks at others' emails he is using these persons as a means to an end. When the head administrator is forced to react to such behaviour he should ask whether he would like to live in a society in which peeking at someone's emails was not disclosed to the writer.

Intuitionism: Ross' prima-facie principles. According to the theory of prima-facie duties (Ross, 1930), humans have many such duties, which are more or less incumbent on us. On some occasions they make conflicting demands on us and we have to determine which of them is the most pressing. Ross lists at least the following: fidelity, reparation, gratitude, non-malfeasance, justice, beneficence, and self-improvement. The head administrator has obligations to users, to guarantee their privacy for example, but he could also be seen as having obligations to other administrators in terms of loyalty and support. In such a situation he has to choose which duty is the most pressing.

Virtue ethics: Under the principles of virtue ethics, when faced with an ethical dilemma we need first to ask what kind of people we are (or would like to be) in order to select from the possible courses of action (Pence, 1993; Macintyre, 1987; Crisp and Slote, 1997). Virtue theory in itself does not equip us with good virtues, but leaves the course of action to be chosen by the moral agent him/herself. In our example the head administrator could deliberate with himself about what kind of human being, or in this instance what kind of professional, he is or would like to be. For example, he might decide that as a loyal colleague he would like to support his colleague, but as a citizen he would like to foster privacy in electronic communications. Traditional criticism of virtue ethics concerns how we decide what the virtues are, and how they could be used to resolve concrete moral conflicts. By way of illustration, let us assume that there is a situation in which two virtues are in conflict. For example, the head administrator may think that he has an obligation to the users to disclose the peeking at emails on the one hand, but on the other hand he may consider it a virtue to support his colleague and to be loyal to him. Hursthouse (1996 p. 19) views this as a no-problem dilemma, arguing that virtue ethics could be seen as a normative theory providing answers to the question of "What should I do?" She suggests that one could meet this condition merely by presenting the idea of virtue ethics in a different manner: "An action is right if it is what a virtuous agent would characteristically (i.e. acting in character) do in the circumstances" (ibid. p. 22). This response has been criticised for not bringing us any closer to the question of how we know what a virtuous agent should do in the computer ethics case: is it virtuous to disclose the peeking to the users? Hursthouse's solution is to go and find a virtuous person and ask his/her opinion. How do we know

who is a virtuous person? For Hursthouse it is someone I regard as "… kinder, more honest, more just, and wiser than I am myself…" (Hursthouse, 1996 p. 24). In other words, if the head administrator were to follow her advice, he would try to find a person who was "kinder, more honest, more just, and wiser than I am." Siponen's (2005) criticism is that different people regard different persons as wise: opinions may differ on whether we should ask the view of a suicide terrorist who kills innocent people or a Buddhist monk, for example. He also wonders how we can measure who is more just, wise, kind and honest (and should I select the most wise or virtuous person, not simply one who is more virtuous than I am)? Hursthouse (1996) does not provide any answer to this question. Her (ibid. p. 34) claim that two virtuous persons (A and B) may view the moral status of the same action differently does not help us either. Finally, even if, for the sake of argument, we somehow knew that a certain person was virtuous, how might we know that he or she was right on this particular matter (Siponen, 2005)? Hursthouse (1996) seems to insist that someone who has virtuous characteristics will act virtuously (or morally correctly) in all cases. However, even a virtuous person may err, so how can we know that he or she is not making a crucial error this time? Hursthouse (ibid. p. 29) also gives another response: we can outrank virtues in the case of conflict, but again, this does not give us any idea – beyond our intuition - of how to carry out such outranking.

Rawls' theory of justice: "the veil of ignorance". Rawls developed his theory of justice in parts (Rawls, 1958; 1963; 1967; 1971). The best-known version is presented in Rawls (1971), although he has since sought to reply to his critics and to further develop his theory (Rawls, 2001). One of his key concepts is that of the 'veil of ignorance', the aim of which is to hide factors that are morally irrelevant. Such factors include age, religion, level of physical or intellectual ability, economic and social status, and gender, all of which may bias our judgment. Because under a 'veil of ignorance' we are not aware of these factors, we do not know whether we are poor, rich, white, black, disabled, male, female, young or old. However, behind the veil everyone shares the same knowledge of politics, psychology, economics, the existence of social inequalities and religious beliefs, for instance. In sum, under the veil we ponder on what principles of justice we would choose to govern a society in which, as members of it, we could be anyone in any position. According to Rawls, the process of deciding an issue behind a veil of ignorance is fair and just because we are then forced to choose impartially because we do not know who we are in society. Further, when deciding on the principles to be followed each participant has the right of veto. The least advantaged parties (e.g., disabled people) are protected because no one knows who they will be after the raising of the veil: behind it every participant faces the possibility of becoming one of the least advantaged. Not only is it used for deciding socio-political principles it also has a role in resolving moral conflicts (Collins and Miller, 1992; Siponen, 2005). In this case one could arrange imaginary negotiations behind the veil, during which the participants try to reach a solution. In our case the head administrator could imagine negotiations in which he, the administrator concerned and a

representative of the user group are present. None of them would know their identity in real life under the 'veil of ignorance': they might just as well be administrators as users. Given this situation, they try to achieve a consensus related to the privacy issue, and to how users are treated and how one should treat one's colleagues. A possible solution that might be accepted by all parties would be as follows. Privacy is a significant right of everyone. Therefore, everyone – including administrators and users - should respect each other's privacy and if any one is caught violating it he or she should be given a warning. If the violation continues the violator should be given a stricter sanction (e.g., dismissed). This solution takes into account reasonableness in sanctions in that the violator would first receive a warning before being punished more severely.

3. RESEARCH DESIGN

Morality is a complex phenomenon (Packer, 1985, 5). To study complex phenomena, interpretive approaches are recommended in IS (Walsham 2006). Such approaches and methods involve investigation of individuals' understanding of the reality, their subjective meanings and how they interact with the world around them (Klein and Myers, 1999, 69; Trauth, 2001). We thereby give the subjects the opportunity to express themselves in their own terms, and do not provide them with pre-defined categories as in quantitative studies (Patton, 1990, 13). Indeed, interpretive approaches allow the possibility of finding something that is impossible to identify in quantitative studies (cf. exploratory studies). Our objective in this study, therefore, is to understand IS students' use of theories of ethics in real life. In order to achieve this, we provided them with open-ended tasks and analyzed their responses from an interpretative perspective: in other words we used the phenomenographic method, which was developed for studying people's understanding of specific phenomena. In the following we present the principles behind the data collection, and describe the method and how it was used in the research. We then show how we applied it in our analyses of the students' perceptions.

3.1 Educational intervention and data gathering
The chosen theories of ethics (Section 2) were introduced to the students during a two-hour lecture, after which a qualitative questionnaire was administered. The questionnaire consisted of a description of an authentic moral conflict (the same one that was used as an example in Section 2) and instructions for resolving it according to the principles of utilitarianism, Kantian ethics (the categorical imperative), virtue theory, prima-facie principles, and Rawls' veil of ignorance. The students were requested to answer in textual form. In order to find out whether they intended to use the theories in real-life moral conflicts we asked them to give a response to the following open-ended question:

"If you confronted the same problem in real life what theories would you use in solving it, and which ones would you not use? (Would you refrain from using theories?) Give arguments for your response."

The subjects were students on an elective Ethics for Computer Professionals (2cr) course, given at the

Department of Computer Science and Information Systems, University of Jyväskylä, Finland. The study was conducted during the academic years of 2004 and 2005, and 41 and 34 students, respectively, took part.

We subjected the students' textual responses to the above question to phenomenographic analysis. Phenomenography and the associated data analysis are explained next.

3.2 Phenomenography

The phenomenographic research method was developed at Gothenburg University in order to study the human understanding of specific phenomena (Marton, 1992). The aim of the approach is to identify and describe qualitative variation in individuals' experiences of their reality (Marton, 1986, 31). The phenomenographic researcher aims to attain a holistic view of a selected phenomenon, and - according to Marton (1995, 178) - this is possible because there are a limited number of qualitatively different ways of experiencing it. Thus, it is possible to obtain a holistic view of individuals' conceptions of the phenomenon under study. What is characteristic of the approach is the focus on arriving at conceptualizations that are faithful to the individuals' experience. These conceptions, which are typically gathered in interviews, are then categorized, and the relations between the categories are further explored (Francis 1993, 69). The researcher thus seeks qualitatively different ways of experiencing the phenomena regardless of whether the differences are between or within individuals. He or she thus attempts to reach a so-called second-order perspective on the investigated aspect of the reality by describing the conceptions of a group of individuals - instead of taking the first-order approach and describing the reality directly, which is the convention in ethnographic studies (Figure 1).
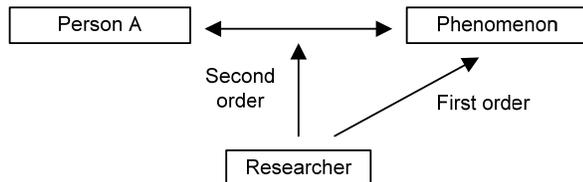

Figure 1. The first- and second-order perspectives (Uljens 1991; Järvinen 2001)

Phenomenography as a method is closer to abductive than to inductive logic (Isomäki, 2002, 51). In the former the theory is created from the empirical data following a guiding principle or some kinds of clues found in the scientific literature, for example, whereas in the latter the theory is created from the empirical data without a priori assumptions. Phenomenographic studies feature a priori assumptions (ibid.).

The approach has been used in studies concerning conceptions of matter (Renström, 1988), and systems designers' conceptions of the human being (Isomäki 2002), for example. A collection of phenomenographic research is to be found on the Land of Phenomenography website (2009).

3.3 Data analysis in phenomenography

The aim of a phenomenographic study is to differentiate, group and interrelate data and then to determine the resulting categories of description (Svensson and Theman, 1983; Kaapu et al. 2006). A category may include several concepts, which may be compared with each other. The aim is then to explore relations between the obtained categories in order to derive a meaningful structural model of the conceptions (Francis, 1993, 74). This search for a meaningful structure demands identification of the distinguishing features of the categories and the determination of logical or other relations between them. There are variations in ways of analysing data transcripts (e.g., interview transcripts, questionnaire responses or even contents of pictures). One possibility is to extract quotations and to deal with them away from the transcripts, and another is to keep the context of the citations in mind (the whole interview transcript, for example) (Bowden, 1994, 11). The next step is to shift attention to the meanings embedded within the quotations. Interest is focused on the 'pool of meanings' rather than on what the individual interviewees or respondents have said. As a result of this work the citations are arranged and rearranged, and narrowed down into categories. It is not necessary to try to obtain a comprehensive account of the conceptions of each individual (Francis, 1993). However, the researcher should be able to show that no more categories would emerge if the selected sample size were increased. Sandberg (2000) observed that after 20 interviews the conceptions start to saturate.

There are characteristics of phenomenography that make it a promising method for the purposes of this study. First, the aim is to show qualitative variation in the perceptions of individuals in a certain population (Järvinen, 2007). In practice the most obvious contribution of the method is that it makes it possible to find different views of the phenomenon under scrutiny (Kaapu et al. 2006). In this study we obtained a collective description of students' perceptions of their intended use of theories of ethics in real life. This information is needed in IS ethics teaching in order to support students in developing their critical-thinking skills. The more fine-grained our results are, the more in-depth understanding we may achieve. Secondly, an individual's morality is subject to development (e.g., Kohlberg, 1981; Rest, 1994), and could therefore be studied from the perspective of learning, for which phenomenography is widely used (e.g., Berglund, 2005).

3.4 Analysis of the students' responses

The students' responses regarding their intended use of theories of ethics were subjected to phenomenographic analysis. They typically comprised five to ten sentences describing their perceptions, and our attempt to determine a meaningful structure was iterative in nature. We started to search for the different ways of using theories of ethics in resolving moral conflicts in the students' perceptions. Our goal was to determine the developmental levels in the responses. First, it became evident from many of them that certain students declined to use theories of ethics at all, and relied on their intuition or consciousness. On the other hand, some of them directly referred to the use of theories for resolving conflicts. Many of the responses were quite

mechanical in nature, suggesting the use of a single theory to find a solution. However, some students compared theories and indicated that they would use a certain one and avoid using another. Many stated that if they really had to use a theory (as the question implied) they would use a particular one or more, but they also wrote that if they were free to use a theory or not they would not use any theory and would rely on their intuition. Moreover, many seemed to assume that they would use theories unconsciously, or that their own intuition might follow some theory without their being aware of it. This diversity in responses made the analysis process iterative in nature, and we went back and forth in our interpretations. In addition, there was evidence in some of the responses of thoughts that could be categorized on more than one level (e.g., refraining from using theories and at the same time indicating the use of a certain one). Indeed, there were different ways of determining the developmental levels in the students' perceptions. One possibility was to assess the number of theories they would use: none, one or many. However, this interpretation was very mechanical and would not give insights into moral-conflict resolution. We concluded that an interpretation that took into account the interplay between intuition and the given theories was the most relevant: the use of any given methodological tool would strengthen the conflict-resolution process, and we therefore concluded that the more students integrate theories into their intuition the more developed the process will be. Consciously applying theories of ethics along with intuitive deliberation represents more developed thinking than relying on intuitive thinking alone, for example. In cases in which the student response indicated thinking applicable to more than one level we added it to the sum of the more developed level. There were slight hints of higher-level thinking in some of the responses, which we included in the more immature level. A collective description of the students' use of ethics theories is given next.

4. RESULTS: THE INTENDED USE OF THEORIES OF ETHICS IN REAL LIFE

The following collective description of students' intended use of ethics theories in real-life moral conflicts is the result of phenomenographic analysis, and constitutes four developmental levels describing how they intended to use the theories alongside their intuition (Table 1).

We based the first level on moral-conflict resolution purely through intuition, without the use of any ethics theory, whereas the second incorporates its possible latent use in intuitive deliberation. The third level reflects the conscious use of theories to support intuitive deliberation, and the fourth level implies their internalised use. The first level represents the lowest and the fourth the highest stage of maturity. The levels are presented below.

Level 1: Rejection of theories of ethics
On this level the students expressed trust in their intuition, consciousness or feelings in their decision-making with regard to moral conflicts. They claimed that ethics theories would be of no help, and may also have harbored an indifferent or even hostile attitude towards them. An example follows:

"The use of theories of ethics in resolving a moral problem was an entirely new experience and it was surprising to realize how different theories lead to different solutions. I wouldn't use them in a real-life situation, mainly because I don't have enough experience of doing so, and some of the theories are quite rigid. I trust my common sense and my own deliberation more than these theories."

Levels	Description	Percentage of students (absolute)
1. Rejection of theories of ethics	The student trusts his or her intuition, consciousness or feelings.	17.3% (13)
2. Latent use of theories of ethics in decision-making	The student recognizes that theories of ethics may be latently present in his or her intuitive deliberation	21.3% (16)
3. Conscious use of ethics theory or theories to support intuitive deliberation	The student consciously uses ethics theory or theories to support intuitive deliberation	56.0% (42)
4. Internalized use of theories of ethics	The student has internalized the use of theories of ethics to such an extent that he or she does not need consciously to deliberate on their use.	5.3% (4)

Table 1. The developing role of theories of ethics in relation to intuition (n=75)

Level 2: Latent use of theories of ethics
On this level the students stated that they would not consciously use theories of ethics, but they also admitted that such theories might be latently in evidence in their deliberations. They might therefore follow the idea of a theory without being aware of it. The potential usefulness of the theories is recognized in these expressions, which therefore represent more developed thinking than those on the previous level. Examples follow:

"Probably I wouldn't use any theory – at least not consciously. I would do what felt right. But probably behind the 'feel right' would be some kind of theory".

"If I confronted such a situation I wouldn't actively consider any theories, but no doubt I would unconsciously apply utilitarianism and prima-facie principles."

"I would use prima-facie theory. In my view people have many duties and should make decisions as the situation unfolds. … In this case, Kant's theory is too strict and virtue ethics is too loose."

Level 3: Conscious use of ethics theory to support intuitive deliberation

Students on this level would consciously use one or multiple theories of ethics as a decision-making aid, in addition to intuition. They might use the theory to find new insights and thus complement what their intuition told them. Whereas on the previous level the theories were latently present, on this level they are consciously used as an aid in resolving moral conflicts. Some students even stated that consciousness was not enough in difficult situations, and that theories of ethics could be of help. Two examples follow:

"Perhaps the best solution would be to mix the theories with so-called intuition. In this way one might come up with the best solution for oneself and one's values. Using the theories and studying them would bring a new perspective to one's values and thoughts."

"If I confronted this situation in real life I wouldn't necessarily first deliberate on what each philosophical theory had to say, or on how the theories approached the solving of moral problems. However, theoretical knowledge could be of help, although no particular theory would offer any exact resolution…."

Level 4: Internalised use of theories of ethics

Student expressions on this level referred to the need to internalise theories of ethics in order to apply them in the most efficient way. Some students indicated that they would need more experience in applying the theories before they could use them effectively, which suggests that they recognised that the use of multiple theories was not enough: they needed to use them repeatedly in order to derive the most benefit in terms of getting alternative solutions. Then again, one may not be aware of using the theories when one has internalised them. This was the most mature level found in the students' responses. An example follows:

"Most probably mixing them all [theories] – in a way one unconsciously uses them all when solving problems (and no doubt the more you deliberate on these issues the more you learn to apply the theories and therefore the more you benefit). But rarely in every-day life do you use theories of ethics to deliberate on issues."

5. DISCUSSION

We studied students' (n=75) perceptions of the applicability of theories of ethics. To our knowledge this was the first study to focus on the impact of IS ethics teaching on student thinking. To be more precise, we would like to highlight five findings based on our empirical results.

First, 17.3 per cent of the students trusted their intuition, consciousness or feelings more than theories of ethics. We called this intuitive decision-making, and it resembles intuitive-level thinking in terms of R.M Hare's (1981) theory of levels of moral thinking. Our findings therefore provide support for Hare's theory. The refusal of these students to use such theories in moral decision-making may not come as a surprise as the teaching intervention was minimal - a two-hour lecture and an assignment given afterwards. Moreover, as Hare (1981) argues, it is common to find people on this level. The rejection of theories resembles particularism, a doctrine claiming that because moral conflicts are contextual and complex using moral rules or principles is inappropriate in resolving them (DeMarco 1996, 26). A single rule does not provide enough guidance in complex situations (e.g., do not lie), and if we accepted multiple principles (e.g., upholding justice and caring at the same time) they would conflict with each other. It is further maintained that there should be no principles in an ethical system, and that we should make judgments in reaction to each individual case. Particularism, in fact, faces criticism with regard to its lack of guidance in resolving moral conflicts (ibid., 41-47). According to its opponents, it is impossible to leave morality up to individual judgment without demanding that similar cases should be judged similarly: rules and principles have a significant role in upholding a reliable system. Hence, theories of ethics have a significant role in moral decision-making and ethics teaching. In fact, R.M. Hare's (1963, 1981) interpretation of Kant, his own theory of Universal Prescriptivism, and Rawls' Theory of Justice suggest that one could first form a set of general moral principles, and then in a situation of conflict (or just to find out whether these moral principles made sense), one could test them according to the universality thesis or utilitarianism, and come up with refined principles.

Second, 21.3 per cent of the students recognised that theories of ethics may be latently present in their intuitive deliberation. We interpreted this to mean that some of the theories may be part of their tacit knowledge, which is informal and unstructured and difficult to express (Nonaka et al. 2000). Indeed, some characteristics of certain theories, utilitarianism for example, might have been present in their thinking before the teaching intervention took place.

Third, a further 56 per cent of the students consciously used one or several theories of ethics to support their intuitive deliberation. Their conscious use of such theories, in addition to following their intuition or conscience, implies that some of them understood that explicitly expressed knowledge (Nonaka and Takeuchi 1995) could be combined with tacit knowledge: one is able consciously to evaluate one's first intuitive solutions to moral problems and then sharpen one's analysis with the help of theories of ethics. This finding also has features in common with Hare's (1981) critical-level thinking, and therefore it provides empirical support for his theory on levels of moral thinking.

Fourth, 5.3 per cent of the students thought that they had to use theories of ethics repeatedly in order to internalise them. While the majority understood the significance of mixing theories in order to get a full picture of potential solutions, only a few had realised the need for constant practice in conflict resolution according to the various theories in order to internalise them.

Fifth, the respondents liked the theories that supported their viewpoint. Many stated that they found a particular theory useful or easy to use because it reflected their way of thinking. Students should be encouraged to adopt alternative viewpoints in order to develop new insights. This finding also suggests that even a few hour-long lectures on IS ethics could have a positive effect on their thinking.

5.1 Limitations of the research

This study carries the typical limitations. First, since the respondents answered through email they were not anonymous, and may not have been as frank as they otherwise would have been. It could be argued that interviewing would have been a better way of collecting the data because it allows additional questions to be asked. In our view, however, written answers have certain strengths over interviews: interviewees need to answer right away, while in our case the students had time to consider their responses. However, in interviewing it is possible to ask further questions, which is not practical in email surveys. Second, the fact that we did not study students' prior knowledge of theories of ethics is a limitation. Students may have received education on theories of ethics in high school, for example.

Internal validity is also a common concern in qualitative research (Lacity and Janson, 1994). In order to guarantee validity we conducted the data analysis as described in Section 3. This kind of peer reviewing of the categories and reaching agreement about them confirms their internal validity. As for Lacity and Janson's (1994) criterion, according to which validity rests on acceptance by the scientific community, we can only leave this for the reader to decide. However, we have cited verbatim from the subjects' texts to show support for our analysis.

5.2 Implications for IS ethics teaching and research

We would like to highlight five recommendations for IS ethics teaching and research on the basis of our findings.

Recommendation 1: A critical evaluation of one's conscience as an ethical guiding light

The fact that 17.3 per cent of the students trusted their intuition or conscience raises a question about their ability to employ critical reasoning in Hare's (1981) terms. According to Ruggiero (1997, 37), real moral growth requires examination of one's conscience and evaluation of its promptings, and conscience is an important single guide in human behaviour but it is not an infallible moral guide. Hare (1981) agrees: our intuitions are not reliable as they only reflect our upbringing and education. If we accepted intuitions as means of making ethical decisions we would end up in a situation in which 'anything goes'. What is a cause for concern in the results of this study is that only 56 per cent of the students indicated that they would combine theories of ethics with their intuition, i.e., engage in critical thinking in Hare's (1981) terms. Given the criticism expressed in the literature concerning the conscience, these results mean that students should be sensitised to its nature and its probable biased effect on ethical decision-making. We therefore suggest that teachers go through the dangers of relying on intuition, as Hare suggests.

Recommendation 2: Use constructivism as a background theory in developing ethics teaching in IS

In the light of the students' weak understanding of the importance of developing skills for resolving moral conflicts, the implication is that a learning theory that supports learning skills should be adopted. Constructivism as an educational approach is recommended as a possible solution: learning is perceived not as the passive receiving of information, but as a continuous process of constructing and reconstructing conceptions of phenomena (e.g., Duffy and Jonassen, 1992; Steffe and Gale 1995). The situational nature of learning is taken into account, and authentic or simulated environments are preferred. The learning process is characterised by the use of problem solving, the active processing of information, and the production of concrete artefacts along the way. The role of the teacher is to support and facilitate the learning process, assessment procedures are embedded in it, and the focus in the assessment is on authentic tasks. In terms of ethics education in IS this would mean that students should be supported in resolving the real-life moral conflicts they confront, and teachers should provide assistance in terms of supporting them in their critical thinking (Hare 1981) by teaching theories of ethics and their application, for example. Integrating this kind of IS ethics teaching into practical training or real-life-oriented project courses might motivate them more than resolving moral conflicts concerning student life.

Recommendation 3: The exemplary application of theories of ethics to show their strengths and weaknesses in resolving moral conflicts

Some students perceived the use of theories of ethics as complex and unclear. Exemplary application of the theories should focus on different conflicts in order to foster understanding of the strengths and weaknesses of each theory. In addition, all major theories should be used to avoid the mistaken impression that a single one will suffice. This also means that tolerance of uncertainty when confronting and resolving moral problems should be encouraged in IS ethics teaching.

Recommendation 4: Integrate theories of ethics into IS ethics courses

Of our respondents, 56 per cent consciously used ethics theory to support their intuitive deliberation. These students thus considered these theories valuable tools, along with their intuition, in resolving moral conflicts, which suggests that even a brief theoretical introduction is useful. Our findings thus support the view that theories of ethics should be included in IS education (Gorgone et al. 2000).

Recommendation 5: Research on the effects of ethics theories on real-life moral conflicts

Whereas our results shed new light on the intended use of theories of ethics in real life, future research should focus on the long-term implications of teaching such theories. Does the teaching intervention support students' moral development? In order to find this out we should first know how well they understand the theories, what mistakes they typically make in applying them, and what kind of educational interventions are the most efficient in terms of facilitating their learning. Second, future research is needed concerning the effects of teaching the theories on the

processes of moral behaviour (moral sensitivity, moral judgment, moral motivation, and moral character; Rest 1994). Does the teaching of ethics theories affect the problem-solving strategies adopted in moral conflicts (moral judgment; Kohlberg 1981), for example?

6. CONCLUSION

Although, ethics is recognised as a vital part of IS curricula, little is known about whether learners find the theories useful and usable in solving ethical problems. In an attempt to redress this situation in this interpretive study, we analysed students' (n=75) perceptions of their intended real-life use of these theories in resolving moral conflicts. The results revealed four levels of intended use: rejection (the student trusts his or her intuition, consciousness or feelings instead of the theories), latent use (the student recognises that the theories may be latently present in their intuitive deliberation), conscious use (the student uses the theories to support their intuitive deliberation), and internalised use (the student has internalised the theories to such an extent that he or she does not need to consciously steer his or her deliberation to their use). On the basis of these findings we offer five recommendations to IS educators: (1) constructivism as an educational approach should be adopted in developing IS ethics teaching; (2) theories of ethics should be integrated into the contents of IS ethics courses, and students should be exposed to exemplary applications that show their strengths and weaknesses in resolving moral conflicts; (3) students should also be encouraged to critically consider their conscience, which is not an error-free guide in moral decision-making; (4) finally, future research should consider how the theories of ethics should be taught and how students apply them (e.g., what mistakes students make in applying the theories). In addition, (5) the effects of teaching of the theories of ethics on students' moral thinking and behavior should be studied.

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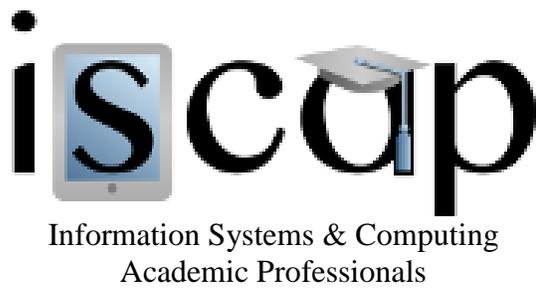
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