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Does gender matter in computer ethics?

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Abstract. Computer ethics is a relatively young discipline, hence it needs time both for reflection and for exploring alternative ethical standpoints in building up its own theoretical framework. Feminist ethics is offered as one such alternative particularly to inform issues of equality and power. We argue that feminist ethics is not narrowly confined to 'women's issues' but is an approach with wider egalitarian applications. The rise of feminist ethics in relation to feminist theory in general is described and within that the work of Gilligan and others on an 'ethic of care'. We argue for the need to connect theory to empirical evidence. Empirical studies of gender and business and computer ethics are reviewed. We note concerns with surveying a student audience, the issue of how far questionnaires and interviews can get to the heart of ethical beliefs and problems of performing statistical analyses of quantitative data. Although we recognize them, our own small survey cannot avoid all these problems. Nevertheless by refining our scenarios we are able to offer an alternative reading of a hacking problem in terms of an ethic of care thereby pointing a way forward for future research in computer ethics inspired by feminist theory.

Key words: computer ethics, ethic of care, ethics and power, ethics research methodologies, feminist ethics

Introduction

The rise of computer ethics as a discipline reflects the attempts of the computing industry, in the midst of a process of professionalization, to deal with the social and ethical issues which are perceived to arise with the introduction and use of information and communications technologies (ICTs). At the same time, some commentators argue that computer ethics is the most significant contemporary development in philosophical ethics.[1] Both computing in general, and the subdiscipline of information systems (IS), are becoming increasingly aware of the importance of social and organizational contexts.[2] This implies that computer ethics has much potential to become a powerful tool within the new dimension of critical writing on ICTs. However computer ethics is a discipline which has had to move quickly. Every week seemingly brings a new information technology problem, making good copy for the news media – security violations, fears about the millennium bug, electronic stalking and so on. The perceived immediacy of such problems often forces writers on computer ethics into a reactive position and onto a utopia/dystopia see-saw characteristic of thinking about the future of ICTs.[3] Coupled with this, professional computing organizations now generally require computer ethics to be taught in computing degree courses. A plethora of textbooks and semi-popular books results.[4] All this suggests that computer ethics might not be able to afford the mature reflection and long ferment that other critical disciplines have enjoyed, a process which can be seen as contributing significantly to the theoretical development of such disciplines.

Part of this problem manifests itself in the way that computer ethics has, as yet, been unable to offer significant novelty on the theoretical front. Much of the best computer ethics writing, even if it discusses and criticizes alternative ethical theories, tends to adopt a

[1] Krystyna Gorniak-Kocikowska. The Computer Revolution and the Problem of Global Ethics. *Science and Engineering Ethics*, 2: 177–190, 1996.

[2] Peter Checkland and Sue Holwell. *Information, Systems and Information Systems: Making Sense of the Field*. Wiley, Chichester.

[3] Debra Howcroft. *Spanning the Spectrum from Utopia to Dystopia: An Interpretive Field Study of the Nature and Characteristics of Internet Usage*. Ph.D. thesis, Department of Computation, UMIST, Manchester, UK, 1998.

[4] E.g. Tom Forester and Perry Morrison. Computer Ethics: Cautionary Tales and Ethical Dilemmas in Computing. MIT Press, Cambridge, MA, 1994. Second edition. Deborah Johnson. *Computer Ethics*. Prentice Hall, Englewood, NJ, 1994, 2nd edition. Duncan Langford. *Business Computer Ethics*. Addison Wesley Longman Ltd., Harlow, Essex, 1999. Richard A. Spinello. *Case Studies in Information and Computer Ethics*. Prentice Hall, Upper Saddle River, NJ, 1997. Sara Baase. A Gift of Fire: Social, Legal, and Ethical Issues in Computing. Prentice Hall, Upper Saddle River, NJ, 1997.

broadly Kantian position[5] We would certainly agree that we could do worse than Kant, but at the same time we argue that might be able to do better and we should certainly explore that possibility. Further reasons why such an exploration is worthwhile go back to our argument that computer ethics could fulfil a vital critical role in IS and computing. In order to do so it needs to examine its currently potentially conservative theoretical positioning and look towards more radical theory. This can be seen to be particularly important in relation to one of the major contemporary strands in computer ethics and indeed IS writing, namely equality of access, emancipation and participation.[6] We argue that these issues cannot be effectively addressed without an understanding of inequalities of power.

Traditional ethical theories do not tend to deal effectively with the ways in which issues of power affect our abilities to make and apply ethical decisions. Power is somehow wrapped up and left implicit in such theories in the same way that it is left unanalyzed in so many intellectual spheres. For instance, under a utilitarian viewpoint who is to make the decisions as to what course of action will benefit the greatest number of people? Modern day utilitarianism often goes under the guise of cost-benefit analyses; for instance costs of improving transport safety versus the 'costs' of a life saved or lost. Johnson's[7] classic example is the utilitarian analysis made by U.S. hospital boards when kidney dialysis machines were scarce and demand exceeded supply. Those who were deemed of most value to society i.e. youngest, professional, without criminal records were chosen first. Examples such as these are often held up to demonstrate utilitarianism's failure to deal effectively with the issue of distributive justice. But concentrating on utilitarianism's failure in this respect masks its failure to address questions of power. The question is not whether or not we would all agree as to the hospital boards' decisions as to the relative value of individual lives. It is, rather, that we are not all given the chance to make those decisions in the first place. The decisions are in the hands of, in this case, a relatively small committee made up of powerful, privileged members of business and the community. Such committees are not usually noted for drawing their membership from minority groupings whose views as to the value of lives may differ from that of the powerful. Similarly cost-benefit analyses of transport safety are in the hands of powerful industries and government departments. It is not generally the ordinary passenger who decides what value should be placed upon safety.

Rosemarie Tong makes this point forcefully in her critique of Mill's utilitarian argument that no *reasonable* person would judge a lower good over a higher good.

> But what makes a judge 'reasonable'? When a group of experienced judges identifies Dante reading as a better pleasure than bingo playing is this because Dante reading is indeed objectively better than bingo playing, or is it simply because these judges have enough *power* to transform their personal preferences into universal law? Are Mill's experienced, reasonable judges *impartial* judges, or are they instead *partisan* judges, more than likely propertied and privileged men, intent on affirming the values of the group they call their own?[8]

Deontological theories of ethics are similarly problematic in relation to power. Kant's rational moral agent assumes an individual with the necessary power to adjudicate over his/her own as well as others' lives. This reflects in the ethical sense the ideal of the 'man of reason' already much criticized by feminist theorists in the epistemological sense where a sense of duty outweighs individual feelings and relationships to others.[9]

Women and computer ethics

In thinking about power in relation to the ethical issues surrounding the introduction and use of ICTs, one of most pressing and interesting problems relates to women's inequalities of access to the technology. This is a complex area defying ready analysis and solution. For instance some studies show that women's usage of the internet is growing so fast as to be almost on a par with men's.[10] But the same time there has been a long tradition of equal opportunities literature which has couched the 'women and computing' problem largely in terms of concerns about the low numbers of women in computing and their relatively unequal position,

[5] Johnson, 1994.

[6] Rudy Hirschheim, Heinz Klein and Kalle Lyytinen. *Information Systems Development and Data Modeling: Conceptual and Philosophical Foundations*. Cambridge University Press, Cambridge, UK, New York and Melbourne, 1995.

[7] Johnson, 1994, pp. 28–29.

[8] Rosemarie Tong. *Feminine and Feminist Ethics*. Wadsworth, Belmont, CA, 1993.

[9] Genevieve Lloyd. *The Man of Reason: 'Male' and 'Female' in Western Philosophy*. University of Minnesota Press, Minneapolis, MN, 1984.

[10] James E. Pitkow and Colleen M. Kehoe. Emerging Trends in the WWW User Population. *Communications of the ACM*, 39(6): 106–108, 1996.

both in education and at work.[11] This is part of a wider and growing literature on gender and ICTs which has latterly grown in theoretical sophistication to bring a consideration of feminist theory into the equation.[12] If aspects of feminist theory can be usefully employed in analyzing the inequalities of power relating to gender in ICT usage then, we argue, this provides an additional rationale for bringing feminist versions of ethics to bear on computer ethics. In particular, feminist ethics may be used to explore and expose the power relations disguised in the traditional forms of ethics currently espoused in computer ethics.

But we want to emphasize that in talking of women and feminist ethics we do not see this approach as one which narrowly focuses on 'women's issues.' We are tempted to remind our audience that as women make up half the human race it is practically impossible for something to be a 'women's issue' without its also being a 'men's issue' on some level. All feminist theory starts with the acknowledgement of women's near universal inferior position. From this starting point it theorizes the reasons for this oppression and, adopting a consciously political approach seeks alternative theories with which to understand and ultimately to alleviate that oppression.[13] With the possible exception of radical, separatist forms of feminism, and without wishing to deny the reality of other human experiences of oppression, feminist theorizing brings with it the hope for a more egalitarian world for all, not just for women. If Tong's utilitarian decision makers are mainly men, they are at the same time drawn from a narrow subset of men, namely those who are white, middle-class and in professional employment. Hence a feminist analysis is predicated on the understanding that there are also strong resonances with class and racial oppression and that these require similarly urgent exploration.

[11] Gillian Lovegrove and Barbara Segal, editors. *Women into Computing: Selected Papers, 1988–1990*. Springer-Verlag, London, 1991.

[12] Alison Adam, Judy Emms, Eileen Green and Jenny Owen, editors. *IFIP Transactions A-57, Women, Work and Computerization: Breaking Old Boundaries – Building New Forms*. Elsevier/North-Holland, Amsterdam, 1994. Eileen Green, Jenny Owen and Den Pain, editors. *Gendered by Design? Information Technology and Office Systems*. Taylor and Francis, London, 1993. Frances Grundy. *Women and Computers*. Intellect, Exeter, 1996. Frances Grundy, Doris Kohler, Veronika Oechtering and Ulrike Petersen, editors. *Women, Work and Computerization: Spinning a Web from Past to Future. Proc. 6th IFIP WG 9.1 Conference*. Springer-Verlag, Berlin, 1997. Rachel Lander and Alison Adam, editors. *Women in Computing*. Intellect, Exeter, 1997.

[13] Rosemarie Tong, *Feminist Thought: A Comprehensive Introduction*. Routledge, London, 1994.

What feminist ethics can offer

A juxtaposition of feminist ethics and computer ethics offers a number of exciting possibilities. As the above discussion suggests, the first of these lies on a theoretical dimension. We need to begin the process of exploring the alternative ethics that feminism can offer computer ethics. This can be used to understand how collectivist approaches to ethics can offer alternative readings of traditional computer ethics problems such as hacking, privacy and on-line harassment. Secondly, given that theories of feminist ethics rest on the hypothesis that women's moral decision making is different from men's in important ways we need to understand the implications of this for computer ethics. In particular, we need to examine empirical evidence for a different ethical point of view amongst women insofar as it relates to the problems of computer ethics.

In this paper these possibilities translate into the following. We continue with a short introduction to feminist ethics, focusing on the notion of an 'ethic of care' and drawing a contrast with traditional ethics. The following section turns to the question of empirical evidence. We review the relatively few empirical studies of gender in relation to computer ethics (and some related studies in business ethics) noting some of the problematic issues raised in the nature of these studies relating both to research methods and to conclusions drawn or not drawn. Our own small pilot study reinforces some of the specific problems we identify in previous studies, namely the problem of developing research methods which adequately get to the heart of the nature of moral reasoning and the problem of interpreting the data once obtained. Although the context of this study is a gender analysis, we argue that these considerations apply more widely and must be taken into account in all studies which purport to explore the empirical nature of moral reasoning. Despite these caveats we offer a tentative alternative analysis of our findings.

At this stage in research on this topic we argue that there is not enough evidence either way to make a categorical claim that gender either definitely does or definitely does not make a material difference to moral reasoning relating to the use of computers. In any case it seems unlikely that it will be possible to make an apodictic statement of that nature which will apply to every situation as this denies the variability of situations where moral reasoning takes place and also the variety of moral agents. Whether gender does or does not appear to make a difference in computer ethics, in the empirical sense is clearly important as the theory cannot be developed without the bedrock of evidential support. The empirical story is not, however,

the bottom line. More important is the question of whether or not the more collectivist 'ethic of care' approach to ethics advocated in feminist approaches to ethics can offer alternative and perhaps better ways to tackle computer ethics problems. It is a beginning to this process of exploration that we offer here.

The rise of feminist ethics

Feminist ethics has two major roles. The first is to challenge the traditional ethical canon in ways described below. At the same time it uses new theoretical ideas derived, in part, from the challenge to mainstream ethics to develop a new ethics with which to make normative judgements on ethical problems from a wide range of domains. But we might question whether we are asking too much of feminist ethics if we demand that it offer critiques on both these two fronts. Yet this sort of critical edge is characteristic of feminist philosophy – the challenge to tradition plus the development of new theory to apply to concrete situations. Doing the first job demands that the second be tackled as well.

Importantly, feminist ethics can offer help to expose the power inequalities which exist in case studies which traditional computer ethics renders invisible in its pursuit of mainstream ethical views and its lack of critique of professional roles and structures. It is this critical bite which has proved appealing to many feminist authors and feminist theory is still angry and looking to take sides. The challenge is then to harness this energy into a constructive critique of computer ethics.

Theoretical feminism has witnessed a growing interest to the extent that it almost threatens to become a mainstream social science. In its modern, or, more correctly, post world war two, form it has developed two fairly distinctive branches. Contemporary Anglo-American feminism has grown, at least in part, from the civil rights movement of the 1960s and 1970s which sought to achieve women's liberation through the search for equality. Simone de Beauvoir's[14] identification of the way that woman is defined as 'other' in relation to the masculine norm is the precursor of postmodern or Continental feminism which rejects rationalism as the sole arbiter of truth and rationalist discourse's abstraction away from the social context a view which does not always sit easily with its Anglo-American counterpart.[15] Within Anglo-American feminism there are distinct styles. The British variant tends to emphasize the pragmatic; politics, education, social science perspectives. North American feminism has claimed more intellectual space for the development of distinctive feminist philosophy. Within this, possibly the two largest areas are feminist epistemology, which sets a challenge to the traditional view of knowers and knowledge[16] and feminist ethics.[17]

Clearly, along side other parts of feminist philosophy, much of the job of feminist ethics is to challenge traditional forms of ethics. But we would be wrong to suppose that it only sets itself the task of analysis and criticism of existing mainstream scholarship. If there is one thing that the many voices of feminist theory have in common, it is the assumption that the oppression of women is almost universal, even if that oppression may take subtle and latent forms, and this also involves the assumption that feminism needs to offer a politics for action, a way of showing that things could be different. Hence criticism is not enough; recipes for action must follow.

Alison Jaggar[18] charts the rise of feminist ethics in North American academic feminism and the search for possible models. Feminist ethical discussion in the 1960s and 1970s focused on grass roots issues such as sexualities and domestic labour. This came together with a more theoretical critique of traditional ethical theory to put the subject on a sounder footing in the 1970s. Further feminist analysis involves the question of whether there is a distinctively feminine moral experience. Carol Gilligan's[19] much quoted book, 'In a Different Voice' offered an empirical demonstration against Lawrence Kohlberg's views that women's moral development is somehow inferior to men's. She argued instead that women often construct moral dilemmas as conflicts of responsibilities rather than rights and that in resolving such conflicts they seek to repair and strengthen networks of relationships. This signals feminist ethics' commitment to responsibility rather than rights, the collective social group rather than the individual and an ethic based on caring rather than the supposedly impartial individual reason of the Kantian moral agent. Indeed the notion of an 'ethic of care' has emerged as a strong theme in feminist ethics.

[14] Simone De Beauvoir. *The Second Sex*. Vintage Books, New York 1949 (trans. and ed. H.M. Parshley 1974).

[15] Susan J. Hekman. *Gender and Knowledge: Elements of a Postmodern Feminism*. Polity Press, Cambridge, 1990.

[16] Linda Alcoff and Elizabeth Potter, editors. *Feminist Epistemologies*. Routledge, New York and London, 1993.

[17] Claudia Card, editor. *Feminist Ethics*. University Press of Kansas, Lawrence, Kansas, 1991.

[18] Alison Jaggar. Feminist Ethics: Projects, Problems, Prospects. In Claudia Card, editor. *Feminist Ethics*, pp. 78–104. University Press of Kansas, Lawrence, Kansas, 1991.

[19] Carol Gilligan. *In a Different Voice: Psychological Theory and Women's Development*. Harvard University Press, Cambridge, MA, 1982.

Jaggar[20] dubs it 'a minor academic industry.' Other writers who have taken up the concept of an ethic of care include Sara Ruddick[21] in her book, 'Maternal Thinking' and more recently the extended analyses of Peta Bowden, Joan Tronto, and Margaret Urban Walker[22]

Considerable debate surrounded and continues to surround Gilligan's work. Although she was criticized and subsequently revised her position, her work has made an enormous impact in the academy beyond the disciplines of ethics and psychology. Larrabee[23] argues: 'Almost anyone today who raises some question about moral development, moral reasoning, ethical systems and applications, the nature of care, and related topics, will at least mention Gilligan's work if not deal directly with her claims.' It is the radical nature of Gilligan's claims that proves so appealing to feminist writers. On the one hand she does claim that women's moral development is different to men's, but on the other she argues that traditional scholarship on ethical development is not neutral but is designed to favour a masculine, individualistic, rationalistic justice and rights based approach to ethics over a feminine, communitarian care based approach. Whether or not one agrees with her, and there has been much writing on feminist ethics since her ground breaking book, she has put firmly on the agenda the possibility that, in moral terms, women speak in a different voice.

Gender and computer ethics – previous empirical studies

The discussion of the previous section implies that feminist ethics can be used to give a much richer, albeit perhaps more ambiguous reading of problems which traditional computer ethics tends to treat in more clear cut ways. The challenge of this section is to see how far the rich ambiguity of arguments from feminist ethics can be seen at work or not within the fairly slender body of existing empirical research on gender and computer ethics.

Much, though by no means all, moral decision making relating to information technologies takes place within the workplace, therefore we acknowledge the relevance of gender studies within business ethics even if such studies do not take computer technology as their central focus. For instance Mason and Mudrack's[24] questionnaire study of undergraduate and graduate business students tested gender socialization and occupational socialization theories against a set of ethical variables. Gender socialization theory hypothesizes differences in ethics variables regardless of whether or not individuals are full-time employees while occupational socialization theory implies gender similarity amongst employees. So, in a sense, they were positing the existence of an ethics split along gendered lines. But at the same time they noted that occupational experiences tended to override socialized gender positions, suggesting that men and women were likely to have similar ethical preferences in the workplace. Their results were contrary to those predicted by either theory. "Although no significant gender differences emerged in individuals lacking full time employment, significant differences existed between employed women and men, with women appearing 'more ethical'."[25] However the authors qualify their results with the caveat that the homogenous nature of their sample i.e. all business students albeit some employed, limits the generalizability of their findings.

McDonald and Pak's[26] research amongst business managers and MBA students (via postal and directly distributed questionnaires) in Canada, Malaysia, New Zealand and Hong Kong studied cultural, gender and organizational differences in ethical decision making. Contrary to Mason and Mudrack's[27] findings these authors discovered no major difference between male and female business managers in considering ethical business decisions. However a breakdown by country indicated more distinct differences in ethical frameworks used in each cultural location.

Considering ethical decision making in relation to computer ethics, we focus on the studies of

[20] Jaggar, 1991.

[21] Sara Ruddick. *Maternal Thinking: Toward a Politics of Peace*. Beacon, Boston, MA, 1989.

[22] Peta Bowden. *Caring: Gender-Sensitive Ethics*. Routledge, London and New York, 1997. Joan Tronto. *Moral Boundaries: A Political Argument for an Ethic of Care*. Routledge, New York and London, 1993. Margaret U. Walker. *Moral Understandings: A Feminist Study in Ethics*. Routledge, New York and London, 1998.

[23] Mary J. Larrabee, editor. *An Ethic of Care*. Routledge, New York and London, 1993, p. 4.

[24] E. Sharon Mason and Peter E. Mudrack. Gender and Ethical Orientation: A Test of Gender and Occupational Socialization Theories. *Journal of Business Ethics*, 15: 599–604, 1996.

[25] Mason and Mudrack, 1996, p. 599.

[26] Gael McDonald and Patrick C. Pak. It's All Fair in Love, War and Business: Cognitive Philosophies in Ethical Decision Making. *Journal of Business Ethics*, 15: 973–996, 1996.

[27] Mason and Mudrack, 1996.

Khazanchi[28] and Kreie and Cronan[29] respectively. Khazanchi's aim was to understand whether gender differences influence the degree to which individuals recognize unethical conduct in the use and development of information technology. To this end a sample of undergraduate and graduate business students was interviewed against a set of seven ethical scenarios. Despite concerns as to the external validity of using students in the survey she found that the women of her survey consistently outperformed the men in identifying unethical actions across all her scenarios.

Unfortunately one of the most prominent recent studies of gender and computer ethics is problematic on a number of counts. Kreie and Cronan[30] have looked at men's and women's moral decision making in relation to a set of computer ethics cases. Astonishingly, these authors make no reference whatsoever to the large body of writing in feminist ethics which might have helped them explain their results. This is all the more surprising given that the work of Carol Gilligan[31] is very widely known over a number of domains – we can take reference to it as a kind of minimum level knowledge of feminist and gender-influenced theorizing in this area. Indeed both the McDonald and Pak and Mason and Mudrack[32] studies cite it. Ignoring such work makes it difficult for Kreie and Cronan to provide any convincing explanation of their results. Indeed they do not even try to offer an explanation as to why the men and women in their study might have made different decisions. The main research method in the study involved asking respondents to rate their responses against a set of factors such as societal, individual, professional and legal belief systems. In this they appear to be falling prey to the common assumption prevalent in computing which has been criticized elsewhere,[33] namely that objective, 'non technical' factors are available and that these can somehow be factored out and used, like the factors in a mathematical expression. Indeed in this example there is the additional assumption that even if such factors do have some reality as discrete factors we can reliably separate our beliefs and rate them against things such as social, psychological or religious beliefs. Can we do this in such a way that each belief system can be identified in an individual's response and can be treated separately?

Importantly, had these authors understood the debate surrounding Gilligan's work, which also centred round an empirical study, they would have been able to apply not only her arguments but also the criticism of her arguments to good effect on their own study. On the latter point, Larrabee[34] notes that one of the criticisms of Gilligan's research was that she asked her respondents to work through a number of artificial case studies rather than observing them making real, live ethical decisions (admittedly somewhat difficult research to undertake). A similar criticism of Kreie and Cronan[35] applies. Asking respondents to approve or disapprove of a scenario where software is copied illegally is likely to invoke disapproval in subjects. We all like to be seen as good software citizens. However, like driving slightly above the speed limit, small scale software copying is rife and this study just does not get at subjects' moral decision making in real scenarios where they may be faced with the decision of whether or not to copy some desirable and readily available piece of software.

The statistical validity of relatively small percentages on not very large numbers (e.g. variations of about 15–10% over 120 women making around 6–12 women) can certainly be questioned in the Kreie and Cronan study when these numbers are used make generalizations as to men's and women's ethical views. In addition Kreie and Cronan's sample is made up of students, a population questioned by two of the studies above as potentially forming too uniform a population from which to generalize. However there is a larger point about the use of statistical techniques which requires to be made in relation to the studies reviewed above and which also informs our own empirical study. We certainly do not regard ourselves as number-Luddites; the validity of using tried and tested statistical techniques on appropriate data is without question. However we do question the way in which fundamentally qualitative information can be packaged up and factored in the manner described above, almost by sleight of hand, and put through the mill of statistical analysis. Apart from questioning the validity of such a factoring process, we contend that it allows authors to hide behind the apparent authority of their statistics obviating the will to develop a more thoroughgoing conceptual, theoretical analysis. In other words numbers cannot replace theoretical explanations.

In summary, the issues raised by this review of previous studies are as follows. Academic studies

[28] Deepak Khazanchi. Unethical Behaviour in Information Systems: The Gender Factor. *Journal of Business Ethics*, 14: 741–749, 1995.

[29] Jennifer Kreie and Timothy P. Cronan. How Men and Women View Ethics. *Communications of the ACM*, 41(9): 70–76, 1998.

[30] Ibid.

[31] Gilligan, 1982.

[32] McDonald and Pak, 1996; Mason and Mudrack, 1996.

[33] Alison Adam. *Artificial Knowing: Gender and the Thinking Machine*. Routledge, London and New York, 1998.

[34] Larrabee, 1993.

[35] Kreie and Cronan, 1998.

clearly find the ready availability of a student population irresistible; indeed as our survey shows below we have been unable to resist this temptation ourselves. All the studies described above rely on student audiences to a greater or lesser extent and several have queried the validity of generalizing findings derived from such populations. The problem is not so much the moral maturity of the respondents in terms of their chronological age. Although the studies described here do not discuss age as a variable, there is likely to be a spread of ages amongst the graduate business students surveyed. Relationship to the world of work is the more important variable here. Respondents who have faced and therefore who have had to make decisions on moral dilemmas in the professional workplace may hold different views on ethical scenarios than those who have had little or no exposure to such environments. This seems to be borne out by the McDonald and Mudrack[36] study but it does not explain why their working women were more ethical than their working men.

The two main data gathering methods used in these studies were questionnaires (often with responses in terms of discrete numerical scales) and more elaborate ethical scenarios either presented to give a 'yes/no' or more elaborate answer in an interview situation. Although these are standard social science techniques we feel that it is now time to question their reliability in relation to uncovering ethical behaviour, of potential concern to all ethical analysis not just compute ethics. Clearly questionnaires and interviews are problematic. Researchers can never be sure if people will respond to a 'live' situation in the same way as they have detailed in the questionnaire. Indeed as individual respondents none of us can be sure that we will behave the way we thought we would and the way we may have described, in all good faith, in a questionnaire. Although these questions always dog social science data gathering there are special reasons why there are particular problems with gathering ethical data. This relates to the gap between 'is' and 'ought'. We may well recognize good ethical behaviour and therefore respond accordingly in a questionnaire but we may not have the moral stamina to stick to our good intentions when faced with a real life situation. This is likely to be more apparent at the 'petty crime' end of the scale. For computer ethics small-scale software copying provides a good example of something which is not legal yet is endemic and causes perpetrators little loss of sleep.

None of the studies related above is substantially reflective on the adequacies of their data gathering methods. Yet our arguments imply that, in the longer term, if we wish to gather data about real ethical decision making in the field we must turn to more anthropologically inspired methods, in particular, forms of ethnography and participant observation.

We have already alluded to the problem of somehow factoring out qualitative information and packaging it up in statistical analyses in relation to the Kreie and Cronan[37] study. All the studies reviewed above used statistical analyses. In the light of the concerns we have expressed as to the reliability of ethical data gathered by questionnaire and interview we need to be wary of conclusions based on results from such methods. Given these considerations there are strong reasons to believe that empirical ethical studies are not at a sufficiently mature research stage to use statistical methods with certainty. There are alternatives. Gilligan's[38] study of moral reasoning focuses on a conceptual analysis. This involved interviewing respondents about fictitious ethical scenarios. Analyzing both boys' and girls' responses she was able to map these both against Kohlberg's standard account of ethical maturity and against an alternative theoretical stance of care ethics. At the stage of empirical enquiry currently obtaining in computer ethics we argue that this approach provides the best way forward in the short term. We now turn to see who these concerns are played out in our own empirical research.

Our study

Stage 1

Our pilot study was designed with issues of population, data gathering techniques, statistical analyses and conceptual analyses though the scope of the study was too constrained to escape many of the problems outlined above. The study was designed to explore the judgements that men and women make on scenarios relating to computer ethics problems.[39] Given the small scale of the study, given the ambiguities of previous studies and given our increasing concern as to validity of data gathering and analysis methods we believed that it was unlikely that we would be able to find conclusive evidence of different ethical beliefs amongst men and women respondents. We were not proved wrong. However we argue that the analysis of our study coupled with the concerns we have already raised point the way forward towards developing more considered studies of gender differences in computer ethics reasoning.

[36] McDonald and Mudrack, 1996.

[37] Kreie and Cronan, 1998.

[38] Gilligan, 1982.

[39] Jacqueline Ofori-Amanfo. *Gender Differences in Computer Ethics Decision Making*. MSc dissertation, Department of Computation, UMIST, Manchester, UK, 1999.

A set of structured interviews was undertaken with 20 students (10 male, 10 female) from an MSc IT conversion course (i.e. designed to convert graduates from disciplines other than computing). Ages ranged from 21 to 40; there was a wide range of first degree subject ranging from engineering to humanities and a wide range of working experience some of which had included significant previous exposure to computers, some not. It could therefore be argued that this group displayed more diversity in age and experiences than, say, within a typical undergraduate population. Interviews lasted between 20 and 60 minutes and involved reading through a set of six fictitious scenarios judging at the end of each whether the behaviour of the subject in the scenario was acceptable or not. We designed the scenarios so that each focused on a specific computer ethics problem e.g. hacking, obstruction of others' use of computing equipment, professional issues, email abuse and copying software. In designing these scenarios we were influenced by the scenarios of the Kreie and Cronan[40] study, Gilligan's[41] research and the examples used for illustration in Johnson's[42] computer ethics textbook.

Analyzing the first set of results revealed almost no difference between the responses of the interviewees. This could have been explained by the uniformity of the student sample used, but as we have argued above our sample is less uniform than is the norm for a student audience. We were tempted to explain it by arguing that our respondents were displaying considerable moral maturity. However a much more obvious reason presented itself. Despite the care with which we had designed the scenarios a number of our respondents pointed out that it was too easy to spot the right answer! The scenarios we had developed were too black and white, too obviously right or wrong. This implied that it was necessary to revise the scenarios, making them richer and much more ambiguous.

Stage 2

A second set of more ambiguous scenarios was designed and we sought a wider audience of respondents, particularly interviewees in employment. The scenarios were shorter and there were fewer of them (four) as we were conscious that we were unlikely to have extensive access to busy professionals' time. We had also identified that it was important to find ways of involving the respondents in the reasoning within a scenario rather than having them somehow stand outside and pass judgement as in the manner of an impassively rational Kantian observer which is implied by the first set of examples. This time, rather than judging the actions of a fictitious James Hackworth, say, respondents became part of the scenario in the second person. 'You' must decide whether to wipe out George's library fines; 'you' decide whether to lock the terminal to go and have a cigarette; 'you' decide whether to download software from the internet. The first set of scenarios had involved malicious intent and self profit. The second set were designed to reflect more needy, desperate reasons for morally doubtful behaviour. In most of the scenarios the first person i.e. the desperate subjects were to be friends and relatives whom the interviewees as second persons were invited to help or hinder through morally questionable behaviour using computer technology. In one case the interviewee her/himself was to be the needy subject i.e. desperately needing to have a cigarette would s/he lock the terminal in a crowded student laboratory so no one else could use it.

The second set of respondents included 12 men and 12 women; all but 9 were professionally employed. The employed respondents came from four organizations, one of which was a university and the other computing companies varying in size from less than 10 employees to a large international corporation. The nine respondents not employed were research students involved in computing projects. All our respondents had considerable experience of using computers.

The techniques we employed in devising the second set of scenarios paid dividends in terms of separating out opinions amongst our respondents. They were not nearly as clear cut as the first set. Yet, as expected we found no clear split on gender lines. In any case we are extremely reluctant to make any kind of categorical assertion on gender lines for such a small amount of data and for a sample which is tiny and biased heavily towards the ease with which we could obtain willing respondents. However we have found it useful to explore the kind of conceptual analysis which Gilligan makes in her ethical study. We ask whether and ethic of care or indeed other ethical stances can be used to explain the responses of the individuals involved in the study. This is offered as an alternative conceptual approach towards analysis of responses, one which can complement statistical approaches and importantly can offer a better connection to theory. For reasons of space we focus on the analysis of one scenario

Analyzing scenario 1 – Hacking

> George needed help desperately. He owed the university library £30 in fines. He had got into this mess because he had been under such severe

[40] Kreie and Cronan, 1998.
[41] Gilligan, 1982.
[42] Johnson, 1994.

stress from his course he had forgotten to renew his books. Coupled with this he was worried about his ill mother. The bills were mounting up; he needed to buy train tickets to visit his severely ill mother. He couldn't ignore the problem any longer. You are a good friend of George's. He knew you had already broken into the library system to change your own account several times. George wanted you to break into the library computer system and delete the fine on his record making it look as though he had paid the fine. Would you do this?

Respondents were asked whether they would break into the library system to wipe out George's fine. Five women and three men said 'yes' while seven women and nine men said 'no'. We draw no generalizations from these results in terms of gender. However it is notable that, in the literature, hacking is overwhelmingly associated with men.[43] Kreie and Cronan's[44] research also confirms the masculine associations of this activity. This was a view confirmed by several of our respondents during the interviews.

Coupled with this, were we to adopt the traditional ethical position towards hacking as in Johnson's[45] textbook we would see hacking as a kind of masculine, freedom of speech, anti-establishment anti-hero activity in tune with the more explicit analysis of authors such as Taylor in terms of implied masculinity. So strong are the masculine associations of hacking that, under such a view, it becomes difficult to explain why *any* women in our study were willing to hack into a computer system. Yet a number of women in our study indicated that, in those circumstances, they were willing to hack into the system. This may not be readily explicable under a traditional view of computer ethics and hacking, however if we were to offer an explanation in terms of Gilligan's[46] ethic of care, their position becomes more readily understandable.

Utilitarian ethics gives us no reason to prefer those close to us in deciding the greater good of society. We may weigh up the sum of human happiness and if the balance is right we may decide to hack into the system anyway, but it will not be on account of our feelings for George. Kantian ethics emphasizes doing the morally correct thing as an independent rational moral agent; feelings neither add nor subtract from the moral worthiness of the action. However under an ethic of care, those who chose to break into the system could be seen as empathizing with George's desperate plight and valuing their relationship with George over abstract moral rules and even concrete library rules or rules about access to computer networks. In other words they were willing to put their feelings for their friend above the law. The ethic of care philosophy emphasizes thinking about people in moral decision making and the effect that moral decisions will have on others. Responsibilities are seen as more important than rights.

Critique of our study

Continuing with the hacking example for the moment, as in any fictitious example there are flaws that occur in the necessary simplification of the case. We offered our respondents the choice of whether to hack or not to hack but we did not offer them the opportunity to lend or give George thirty pounds. Similarly our own knowledge of university librarians demonstrates that they are rarely so hard-hearted as to ignore the plight of students with family problems.

Our experiences with this study show that with the size and scale of our approach we have been unable to avoid some of the pitfalls which we have found in other studies. Surveying student audiences gives too uniform a population, unrepresentative of the workplace. Surveys and interviews may not get to the heart of ethical reasoning in relation to information technologies. However we maintain that our second set of scenarios offers a more sensitive data production method than the simpler questionnaires and scenarios offered by other studies. Nevertheless we are aware that our empirical study has not got to the heart of one of the questions we raised at the beginning of this paper, namely that of power. In devising scenarios where we were inviting respondents to empathize with a fictitious person we were asking our respondents to act at a similar 'power level' to the subject with which they were relating. For example in the library example, George is a student and the respondent as friend is probably a student by implication. It may well be difficult to design scenarios which illustrate and explicate power relations whilst at the same time asking respondents to find the necessary level of empathy. Much thought needs to go into the design of studies to explore these issues and a thoroughgoing exploration of power must be left to future studies. In offering an alternative ethic of care reading of a hacking scenario we have at least shown the possibility that feminist ethics can contribute to an analysis and understanding of issues relating to computer ethics.

[43] Steven Levy. *Hackers: Heroes of the Computer Revolution*. Dell Publishing, New York, 1985. Paul Taylor. *Hackers: Crime and the Digital Sublime*. Routledge, London and New York, 1999.

[44] Kreie and Cronan, 1998.

[45] Johnson, 1994.

[46] Gilligan, 1982.

Conclusion

This paper makes a plea for computer ethics to explore alternative ethical frameworks. More specifically we argue that an exploration of feminist ethics, especially Gilligan's ethic of care may offer an alternative reading of computer ethics problems particularly relating to questions of power which are so often absent from traditional ethical theories. Turning to existing empirical studies of gender in business and computer ethics we find results inconclusive and methods problematic. In designing our study we consciously tried to marry feminist and computer ethics theory to appropriate empirical methods; such an approach has not been undertaken to any great degree before. We are aware that we have not been able to avoid all the pitfalls we have identified in other studies. Nevertheless by refining the scenarios used in the study we are able to offer a reading of responses in terms of an ethic of care. Returning to the original question of this paper. 'Does gender matter in computer ethics?' We believe that it does matter both on the theoretical front and on the empirical front and also in the relationship between them. Gender and computer ethics is as yet undertheorized and underexplored. Our own small contribution can, we hope, point to the way forward towards future research aimed at understanding how and why gender matters in computer ethics.

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