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Abstract: This paper reviews the relatively small body of work in computer ethics which looks at the question of whether gender makes any difference to ethical decisions. There are two strands of writing on gender and computer ethics. The first focuses on problems of women's access to computer technology; the second concentrates on whether there are differences between men and women's ethical decision making in relation to information and computing technologies (ICTs). I criticize the latter area, arguing that such studies survey student audiences, that they emphasize the result of an ethical decision over the process of arriving at the decision, that they are problematic in relation to research methodology and that they are undertheorized. Given that traditional ethical theories largely ignore gender, I offer a gender based ethics in terms of feminist ethics as the best place to look for theoretical substance. The paper concludes by considering how feminist ethics can be combined with empirical studies that emphasize observation and interviewing in order to move gender and computer ethics onward from statistical studies of men's and women's ethical decisions toward more substantially theorized studies of areas in computer ethics which have gender implications, such as privacy and power.

Introduction

The topic of gender has been somewhat neglected in computer ethics writing to date. Nevertheless there is a small body of work which takes seriously the point of view that gender has some bearing on computer ethics problems. This paper critically reviews that research to argue that current directions in gender and computer ethics research are somewhat problematic and could benefit from a better balance between statistically based empirical research and a more substantial theoretical understanding of gender and computer ethics. In this paper I characterize two strands of writing on gender and computer ethics. The first focuses on problems of women's access to computer technology; the second concentrates on whether there are differences between men and women's ethical decision making in relation to information and computing technologies (ICTs). I engage with the latter area of research arguing that there are problems in confining surveys to a student audience, that such studies privilege the result of an ethical decision over the process of arriving at the decision, that they often fall prey to the qualitative/quantitative debate bedeviling much work on ICTs and information systems and that they are frequently undertheorized.

Although computer ethics research must always maintain a balance between empirical research and theory, gender and computer ethics research is long overdue for more substantial theorizing. Given that traditional ethical theories largely ignore gender, I offer a gender based ethics in terms of feminist ethics as the best place to look for theoretical substance. Feminist ethics has witnessed a tremendous growth

in interest within feminist philosophy and so holds much explanatory potential, not just for gender and computer ethics problems, but as an alternative ethics for computer ethics, in general, to rank alongside more traditional approaches from utilitarianism, Kantian ethics or virtue ethics. After briefly describing the possibilities inherent in feminist ethics, the paper concludes by considering how it can be combined with empirical studies that emphasize observation and interviewing in order to move gender and ethics onward from statistical studies of men's and women's ethical decisions toward more substantially theorized studies of areas in computer ethics which have gender implications, such as privacy and power, which are, as yet largely unexplored.

Gender and computer ethics – barriers and pipelines

In this, and the following section, I explore the two main strands of current research in gender and computer ethics. The first strand can be viewed as a spillover from information systems and computing research on barriers and "pipelines" (Camp, 1997) which tends to see the gender and ICT problem as one of women's access to ICTs and their continuing low representation in computing all the way through the educational process through to the world of work. Until recently such research found voice more substantially in the research areas of work, education, psychology (Brosnan, 1998) and on the fringes of computing disciplines (e.g. see Lovegrove and Segal, 1991; Lander and Adam, 1997; Grundy, 1996). However papers in this general mold are beginning to ap-

pear in ethics journals and computer ethics conferences suggesting that authors are starting to cast the women and computing access/exclusion problem as an explicitly ethical problem although this is not how the area has been traditionally seen in the past (e.g. see Rogerson and Stack, 1997; Panteli and Stack, 1998; Turner, 1998; Panteli et al., 1999; Turner, 1999).

I do not wish to elaborate an extensive commentary on this first strand of research on gender and computer ethics. However I note that studies which discuss the low numbers of women in computing have been criticized in the past for adopting a traditional, liberal position which characterizes the gender and computing problem in terms of educating, socializing and persuading women rather than challenging the subject matter and deeper structures of the subject (Henwood, 1993). Apart from anything else the liberal argument, in leaving the organization of computing unchallenged does little to alleviate women's position in relation to computing education and work and campaigns to attract women based on such a position do not work. In noting that an unanalyzed liberalism is a trap for the unwary, I do not want to imply that the gender and computer ethics work I cite above suffers from it. Interestingly, because such work is beginning to view itself as ethics research it sidesteps some of the criticisms of liberalism. Although the woman and computing problem is not new, it is still there. Numbers of women though all levels of computing remain low, meaning that women are still being excluded from employment in well-paid and interesting careers for whatever reason, and so it is a problem still to be solved. Casting this more as an ethical problem than an access problem starts to make the issue look less like a question of why women are not, apparently, taking up the opportunities being offered to them, and more like an ethical and political problem of exclusion. In other words it moves the onus for change away from women, and their apparent failure to take up challenges, toward the computer industry's failure to examine and change its exclusionary practices. Apart from anything else this work serves to act as an important reminder of how little has changed for women in the computing industry in the last twenty or so years.

Gender and computer ethics – men's and women's moral decision making

The other strand of research on gender and computer ethics focuses on concerns more central to computer ethics as a whole, namely the question of whether there are detectable differences between men's and women's ethical decision making in relation to computer ethics (Mason and Mudrack, 1996; MacDonald and Pak, 1996; Khazanachi, 1995; Kreie and Cronan, 1998; Bissett and Shipton, 1999; Escribano et al., 1999). Broadly speaking the research methodology used in these studies can be characterized as follows. A population of subjects (in these studies always a student popula-

tion) is surveyed, by questionnaire and is asked to rate responses either in relation to a set of questions or a set of artificial scenarios. Responses are usually Yes/No or rated against a Likert scale. The results are then analyzed quantitatively (some using little more than percentages, but mostly using more sophisticated statistical methods) and this may involve splitting out various ethical variables and rating subjects' responses against them. The analysis is then turned back from quantitative measures into qualitative conclusions which are, in some cases, that women are more ethical than men in relation to computer ethics problems, in other cases that there is no discernable difference. Interestingly, none of the studies found that men were more ethical than women. Sometimes these results are related, theoretically to Gilligan's (1982) "In a Different Voice" (Bissett and Shipton, 1999; Mason and Mudrack, 1996; McDonald and Pak, 1996) which is the best known work in feminist ethics but others make no use of feminist or gender based ethics in terms of explanation (Kreie and Cronan, 1998). The following paragraphs describe these studies in more detail.

Much decision making in relation to computer technologies takes place within the workplace, therefore gender studies within business ethics and information systems are relevant even if ICTs, as such, are not the main focus. Hence the first three studies briefly outlined here are concerned with more general business ethics decision making in relation to gender. In style and substance they are very similar to the computer ethics studies I describe in more detail below. I include these, both to sharpen my characterization of the style of research methodology being used, to illustrate that results regarding the importance of gender in ethical decision making are quite inconclusive and finally to strengthen my critique of this methodology which follows later in the paper.

Mason and Mudrack's (1996) questionnaire study of undergraduate and graduate business students in a classroom setting tested gender socialization and occupational socialization theories against a set of ethical variables. Gender socialization theory suggests differences in ethics variables regardless of the employment position of subjects while occupational socialization theory implies that employees are similar in outlook and gender differences will not figure in ethical decision making. So the first theory argues for an ethics split along gendered lines, while the second argues that occupational experiences tended to override socialized gender positions, suggesting that men and women are likely to have similar ethical preferences in the workplace. Responses were rated against Froelich and Kottke's (1991) standard ethics measure as the authors recognize the idiosyncrasy of measures often used in business ethics research. Results were analyzed using standard statistical measures. Their results fitted neither 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.'" (Mason and Mudrack, 1996, 599). The authors commented that the fact they were using students as subjects, albeit students in employment, and noted that this could make their study results more homogeneous than with a more general population.

McDonald and Pak's (1996) research amongst business managers and MBA students (via postal and directly distributed questionnaires) in Canada, Malaysia, New Zealand and Hong Kong studied cultural and organizational differences as well as gender differences in ethical decision making. They focused on the decision making process and noted that there has been relatively little research on the cognitive processes involved. Based on the literature on ethical frameworks they arrived at a framework containing a set of their own ethical elements including self interest, utilitarianism, duty, justice, religious convictions etc. A set of ethical scenarios were devised to explore these and subjects were invited to agree or disagree with the scenarios on a five point Likert scale. The results were analyzed statistically and were opposite to Mason and Mudrack's (1996) findings in that they found 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.

Reiss and Mitra's (1998) study of ethical beliefs amongst college students once more used a questionnaire with a Likert scale where students were asked to rate various actions on a five point scale from very acceptable to very unacceptable. These authors (Reiss and Mitra, 1998, 1583) noted that previous studies tend to split equally amongst those that find women more ethical and those that find no difference. Apparently no study finds men to be more ethical than women in relation to business ethics. The authors analyzed their results statistically to find partial support for the hypothesis that men tended to find behaviors of a dubious ethical nature more acceptable than did women.

Focusing more specifically on computer ethics, I discuss the studies of Khazanchi (1996) and Kreie and Cronan (1998) 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 surveyed against a set of seven ethical scenarios and were asked to rate these as to degree of unethicalness. These scenarios reflected categories comprising the ethical responsibilities of IS professionals regarding disclosure, social responsibility integrity, conflict of interest, accountability, protection of privacy and personal conduct and were derived from Parker's (1980) earlier research. Subjects were asked to rate the unethical acts in each scenario against a 7-point Likert scale where 1= "absolutely not unethical" and 7= "absolutely unethical" with no labels for the intermediate range. Khazanchi

then derived an aggregate score of unethicalness and correlated this against gender. Despite concerns as to the external validity of using students in the survey he found that the women of his survey consistently outperformed the men in identifying unethical actions across all his scenarios. "The present study shows the ability to recognize (and ultimately resist) unethical actions involving IS dilemmas rests in part on the nature of the ethical dilemma and differences in gender of the adjudicator. The findings provide an insight into gender differences in the ethical judgement of future leaders and managers in the management information systems discipline." (Khazanchi, 1996, 744).

Bissett and Shipton's (1999) questionnaire survey of IT professionals studying part time used a set of scenarios with respondents rating whether they would undertake similar behaviour on a scale of "always" to "never". They found a small positive correlation between female gender and a tendency to consider the feelings of others. By contrast, Escribano, Pena and Extremera's (1999) survey of university students involved Yes/No responses to a number of questions. They found the women in their survey far more interested in the ethical aspects of information technologies than were the men, despite the fact that they used such technologies much less than the male respondents.

Probably the most prominent of recent studies of gender and computer ethics is Kreie and Cronan's (1998) research. These researchers explored men's and women's moral decision making in relation to a set of computer ethics cases. The examples were, by and large, not blatantly criminal but were designed to reflect the situations we are often presented with in the workplace where extensive computer systems and networks are pervasive e.g. viewing sensitive data, making an electronic copy etc. The main research method in the study involved asking respondents to rate their responses against a set of influential environmental factors such as societal, individual, professional and legal belief systems. In addition there are so called "personal values." The authors proposed these factors as those that influence ethical decision making. Once again a student population was surveyed and asked to rate whether the behavior described in a given scenario was acceptable or unacceptable.

Following the survey it appears that some discussions with students helped explain judgements about the various scenarios. Respondents were also asked about their moral obligation to take corrective action and whether knowledge of negative consequences e.g. a fine or reprimand would affect what a person should or should not do. For each scenario the respondents were asked which set of values e.g. personal values, societal environmental etc. influenced their decision most. The authors' conclusion was that most people were strongly influenced by their personal values. Kreie and Cronan (1998, 76) conclude: "Men and women were distinctly different in their assessment of what is ethical and unethical behavior. For all scenarios, men were less likely to

consider a behavior as unethical. Moreover, their judgement was most often influenced by their personal values and one environmental cue – whether the action was legal. Women were more conservative in their judgements and considered more environmental cues, as well as their own personal values.” Kreie and Cronan (ibid.) make suggestions as to the policy implications of these results: “From the manager’s viewpoint, men may be influenced more effectively through statements of what is legal (or not). Women might be effectively influenced by passive deterrents (policy statements and awareness training of unacceptable ethical behaviour.)”

Critique of gender and computer ethics studies

I have described a number of empirical studies of gender and business ethics and gender and computer ethics. I now wish to comment on a number of aspects of these studies and argue that these aspects are problematic. These are described under the following sub-headings: student population, quantitative vs. qualitative research methodology, ethical decisions vs. ethical processes and how to get at the latter, and lack of appropriate theory.

Student Population

In every one of the studies detailed above, a student population was surveyed. As university teachers it seems we are unable to resist the temptation to utilize that most captive of audiences, our students! (Adam and Ofori-Amanfo, 2000) Although, it is clear, that in some of the studies the students also worked or had work experience this is still problematic. This is not just because, as Mason and Mudrack (1996) note, this may give a certain homogeneity to the results obtained. More importantly there is a hidden power relationship variable between student and teacher which none of these studies has made explicit. A student and teacher do not stand in the same relationship as a researcher and a member of the public, say. This points up the need to be much more aware of power relationships in computer ethics, an area which has hitherto received little attention (Adam and Ofori-Amanfo, 2000).

Quantitative vs. Qualitative Research Methodology

All the studies detailed above were similar in approach, in that they all employed questionnaire surveys, either with a binary or 5-point or 7-point Likert scale which could then be analyzed quantitatively for statistical significance. I am aware that a number of the studies I discuss are from one journal (*Journal of Business Ethics*) and that journals often have a preferred style, albeit often a tacit one. That apart, it is interesting that authors are prepared to use statistically based questionnaire approaches so uncritically. There are a number of problems with such an approach. Only the Bissett and Shipton (1999) paper points to the problem of whether what people say they do is the same as what they do in a real-life situation. This may be even more of a problem than

usual in the present set of studies as respondents are explicitly asked whether they would behave in some potentially immoral or even illegal way. In other words respondents are not being asked to choose between categories which are anything like neutral. It is naturally tempting to cast oneself as more moral in the questionnaire than one might be in real life.

This is clearly a well trodden path in all social research, nevertheless it cannot be ignored and points to the need for consideration of the appropriateness of other research methods.

There is also the question of what responses on a numerical scale actually mean and whether subjects can reliably attach meaning to the individual intervals in a 7-point scale. Is 1= “absolutely not unethical” the same as “absolutely ethical” or not and does it differ from 2= “not quite so absolutely unethical”?

It is interesting that none of the authors in these studies proposed interviewing or ethnographic techniques such as participant observation (e.g. see Forsythe 1993a, 1993b). Participant observation requires an often lengthy period amongst the culture under study. The observer becomes part of, and participates in the culture (e.g. in Jordan’s (1978) study of birth in four different cultures, as a woman with a free pair of hands she was called upon to help deliver a baby!). But, at the same time, the observer must retain a degree of strangeness from the culture under study otherwise he/she will begin to take for granted aspects of that culture that need to be analyzed and made explicit. For computer ethics, the promise of participant observation lies in the potential to witness ethical reasoning as it happens. This may reveal it to be a process with a much more complex and less clear-cut structure and which may not even result in a decision at all, when compared with the instant Yes/No decisions prompted by questionnaires.

One cannot help but note that interviewing, and participant observation are not only much more time consuming techniques but also that their results are much less amenable to rendering into numerical form. Questionnaires can be made to yield numbers which can then be fed into the statistical mill no matter what the validity of the original qualitative assumptions on which they were based. The generalizability from small numbers (some studies report less than two hundred respondents) can also be questioned.

In performing a quantitative analysis of qualitative elements the studies described above appear to be falling prey to the common assumption prevalent in computing which has been criticized elsewhere, namely that objective factors are available and that these can somehow be factored out and used, like the factors in a mathematical expression (Adam, 1998). Indeed in the Kreie and Cronan (1998) study 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, psycho-

logical 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? Apart from questioning the validity of such a factoring process, I argue 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, conceptual explanations.

The qualitative/quantitative conundrum, to which the above discussion suggests gender and computer ethics empirical studies are rapidly falling prey, is part of a larger debate between qualitative and quantitative research methodologies. This discussion applies not just to work in gender and computer ethics, although it is starkly visible in the studies I outline above, but is more generally a part of research in information systems and business. Oakley (2000) points out that this has been a long running issue in the social sciences. She argues that it is not nearly as clear cut as it appears as it is impossible to be completely qualitative e.g. we talk of "some", "more", "less." Similarly it is impossible to be completely quantitative as our quantities are quantities of some quality. Despite this, the debate has assumed an unwelcome polarity, a kind of "paradigm war" (Oakley 2000, 31). Inevitably one side tends to dominate and in many parts of the social sciences, good research is thought of in terms of quantitative research.

Somewhat belatedly the qualitative/quantitative debate has filtered into business and management and into information systems research where the two camps are seen as "hard" and "soft", roughly translating into quantitative and qualitative and where the hard or quantitative enjoys a hegemony (Fitzgerald and Howcroft, 1998). There also certain tacit geographical mappings with quantitative techniques favored in North America and qualitative approaches more popular in Scandinavia and Europe. With the pressure on academics world-wide to publish it is small wonder that readily achieved statistical surveys should predominate in gender and computer ethics research as elsewhere.

All the studies reviewed above used statistical analyses. In the light of as to the reliability of ethical data gathered by questionnaire 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 (1982) 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 I argue that a more conceptual approach provides the best way forward in the short term.

Ethical Decisions vs. Ethical Processes

All these considerations imply that empirical research in this area has not yet got to grips with understanding the process of making an ethical decision. If we were to focus on the process rather than the decision this would make the decision seem less important *per se*, as quite different approaches can arrive at the same decision through different routes. This aspect is well known to computer ethics researchers e.g. as in Johnson's (1994) description of act utilitarianism as being similar to ethical relativism. Looking at processes rather than decisions would also mean that we would have to be much more sophisticated about our theorizing, as I shall suggest below, and stop treating gender as a unitary, unanalyzed variable. Apart from any other reason this tends toward essentialism i.e. the assumption that men and women have essential, fixed characteristics.

Questionnaire techniques focus too sharply on the decision made rather than how the decision was achieved, except insofar as these techniques account for decisions by the kind of factoring process I describe above. It is no easy matter to find ways of getting at the process of ethical decision making. None of the studies related above is substantially reflective on the adequacies of their data gathering methods in this respect. Yet my 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 where the observer participates and becomes part of the culture. Such an approach is likely to yield much richer accounts of the ethical decision process than can be gained by questionnaire type surveys.

Lack of Theory

The arguments of the last three sections taken together suggest that existing work on empirical research on gender and computer ethics is undertheorized. Part of the problem is that the field is far more fragmented than I have made it appear in this review. By and large, the studies I discuss here do not appear to "know" about one another. There is little sense of a tradition where one study builds on another; wheels are continually reinvented. A second aspect of the weak theoretical base of this research is displayed in the way that, for some of the papers reviewed, the authors end up making often unwarranted generalizations which do not appear to follow from their research, by way of conclusion. For instance, Kreie and Cronan (1998) conclude from their study that women are more conservative in their ethical judgement than men and that they might be best with passive deterrents toward unethical behavior while men might require more substantial ethical deterrents. It is hard to see why women's apparent tendency toward more ethical behavior should make them more conservative. This does not follow from the research issues here but starts to look like a stereotypical judgement about an expectation of men's more

“laddish” behavior against a well behaved female stereotype. It is just such a stereotypical judgement that feminist ethics seeks to argue against. Similarly Khazanchi’s (1996) conclusion is that women are better able to recognize “and ultimately resist” unethical behavior. However it is not clear why the ability to resist unethical behavior should go alongside the ability to recognize it. One is reminded of the old saying often attached to cookie jars as a deterrent: “I can resist everything except temptation.” Once again this conclusion smacks of gender stereotypes of women’s “good” behavior.

But the most significant aspect of the undertheorizing problem relates to the way that this research makes so little reference to the, by now, quite substantial body of research on feminist ethics which could be used to help explain results. We can take citation Gilligan’s (1982) “In A Different Voice” as a kind of minimum level of reference to feminist ethics. Of the research reviewed above, only McDonald and Pak (1996), Mason and Mudrack (1996) and Bissett and Shipton (1999) refer to it and, indeed, it is the only work of feminist ethics referenced in any of the studies.

Surprisingly, Kreie and Cronan (1998) make no reference either to Gilligan nor to any other part to the large body of writing in feminist ethics which might have helped them explain their results. Indeed they make no attempt to explain *why* their research apparently reveals differences between men and women. This is all the more surprising given that Gilligan’s work is very widely known over a number of domains, unlike other work in feminist ethics. Importantly, had Kreie and Cronan (1998) understood the debate surrounding Gilligan’s work, which also centered 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 (1993) 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. As I have argued above, this is difficult research to undertake and it requires a time consuming observational approach rather than a survey.

A similar criticism of Kreie and Cronan (1998) 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. This is very like the argument in Nissenbaum’s (1995) “Should I Copy My Neighbor’s Software?” On the face of it, taking the viewpoint of standard ethical positions, the answer appears to be “no”. But following Nissenbaum’s detailed arguments shows that the answer is not nearly so clear

cut when one probes the reasons in more detail. The binary approval/disapproval in Kreie and Cronan (1998) or scales of approval and disapproval invoked by Likert scale studies evoke too sharp a Yes/No response. Indeed there are hints that the researchers found the responses to clear cut in the Kreie and Cronan (1998) study where the authors go back and interview groups of students as to how they arrived at decisions. In other words these authors find themselves obliged to go back in order to probe the processes behind the decisions.

A plea for feminist ethics

The last section made the case that research on gender and computer ethics is currently undertheorized. I would like to argue that there are strong reasons to suggest that feminist ethics can be used to offer fruitful readings of gender and computer ethics problems.

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. For instance a feminist reading of privacy suggests strongly that privacy issues are not the same for men and for women (DeCew, 1997). Furthermore we need to understand the gender implications of new potentially privacy threatening technologies e.g. cookies, data mining and biometrics. All these have yet to receive a reading from the point of view of feminist ethics. It may well be the case that women have different responses to men in regard to computer privacy as DeCew (1997) suggests that women and have different views and expectations of privacy in general.

Secondly, feminist ethics brings a direct consideration of questions of power which are so often absent in traditional ethical theories. Utilitarianism argues for the greatest good for the greatest number. But who is to decide whether one good is better than another? We do not all have an equal say. Tong (1993) argues that it is powerful groups, usually white professional men, who are the decision makers in contemporary cost-benefit analyses. Questions of power are often disguised but they are crucial to the ethical decision making process. For instance, it was noted above that in the empirical studies discussed there is a disguised power relation between the university teachers undertaking the surveys and the students who take part. This suggests that a study of problems relating to Internet pornography and cyberstalking in terms of gender ethics might prove instructive. Issues of power must be rendered visible to make these and other areas understandable.

Finally, 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. So far this has barely been attempted in current gender and computer ethics studies (but see Adam and Ofori-Amanfo, 2000).

Categorical claims that gender either definitely does or definitely does not make a material difference to moral reasoning relating to the use of computers somehow misses the point. 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.

Feminist ethics has two major roles. The first is to challenge the traditional ethical canon; the second to develop 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.

Jaggar (1991) has described the rise of feminist ethics particularly within North American academic feminism and its search for possible models. Feminist ethical discussion in the 1960s and 1970s focused on grass roots issues such as sexualities and domestic labor, in other words more pragmatic equal opportunities type issues. This strand of research merged with theoretical critiques of traditional ethical theory from about the 1970s onwards. Further research focused on the question of whether there is a distinctively feminine moral experience. Gilligan's much quoted book, "In a Different Voice" was enormously influential in developing an empirical demonstration against Lawrence Kohlberg's views that women's moral development is somehow inferior to men's. It is interesting to note that, in the gender and computer ethics studies described above, not one found men's ethical decision making to be more moral than women's, while several found women's to be more moral than men's. These empirical findings would be extremely difficult to explain under the Kohlberg model.

Gilligan 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 demonstrates 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 concept of an "ethic of care" has emerged as a strong theme if not the strongest theme in feminist ethics. Jaggar (1991) has termed it "a minor academic industry." Other writers have developed further the concept of an ethic of care include Ruddick (1989) in her book, 'Maternal Thinking' and more recently the extended analyses of Bowden (1997), Tronto (1993), and Walker (1998).

Considerable debate 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. This is why it is surprising to see it discussed in so few of the gender and computer ethics studies. When it was first published its ideas were very radical. 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 favor a masculine, individualistic, rationalistic justice and rights based approach to ethics over a feminine, communitarian care based approach. I have argued above that there is some evidence that gender and computer ethics studies are making stereotypical judgements of women's "goodness" which do not follow from the research. Whether or not one agrees with her, she has put firmly on the agenda the possibility that, in moral terms, women speak in a different voice.

Conclusion

In this paper I have characterized two strands of gender and computer ethics research. The first casts women's exclusion from the computing industry as an ethical problem. Although this type of research has sometimes been criticized for its tendency toward liberalism, I argue that it is broadly beneficial to be reminded that the well-known problem of women's low numbers in computing has not gone away. More pertinently I have focused on empirical survey studies of men's and women's ethical decision making in relation to business ethics and computer ethics. Existing studies are seen to be problematic on several counts. They survey student populations, thus obscuring questions of power differentials between researcher and student; they accept uncritically that quantitative survey analyses of conceptual questions are meaningful; they focus on decisions made rather than the process of making decisions and they are undertheorized.

Part of the problem lies in the way that there is, as yet, no real tradition of gender and computer ethics research which builds upon past empirical and theoretical research. To begin to build such a tradition two related things are needed. First of all we need to explore alternatives to the survey technique currently employed in so many empirical studies; in particular, I argue that we can expect to be more successful in uncovering the processes of ethical reasoning using observational and interviewing strategies. Secondly we need to combine more thoroughgoing empirical studies with theorizing from the burgeoning literature of feminist ethics to offer alternative readings of issues such as power and privacy. Only then can we begin to see what feminist ethics can offer computer ethics. ♦

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