



香港城市大學  
City University of Hong Kong

專業 創新 胸懷全球  
Professional · Creative  
For The World

# CityU Scholars

## COMPUTER ETHICS AND TERTIARY LEVEL EDUCATION IN HONG KONG

WONG, Eva Y.W.; DAVISON, Robert M.; WADE, Patricia W.

### Published in:

Proceedings of the Conference on Ethics in the Computer Age, ECA 1994

Published: 15/11/1994

### Document Version:

Post-print, also known as Accepted Author Manuscript, Peer-reviewed or Author Final version

### Publication record in CityU Scholars:

[Go to record](#)

### Published version (DOI):

[10.1145/199544.199600](https://doi.org/10.1145/199544.199600)

### Publication details:

WONG, E. Y. W., DAVISON, R. M., & WADE, P. W. (1994). COMPUTER ETHICS AND TERTIARY LEVEL EDUCATION IN HONG KONG. In J. M. Kizza (Ed.), *Proceedings of the Conference on Ethics in the Computer Age, ECA 1994* (pp. 127-132). Association for Computing Machinery (ACM).  
<https://doi.org/10.1145/199544.199600>

### Citing this paper

Please note that where the full-text provided on CityU Scholars is the Post-print version (also known as Accepted Author Manuscript, Peer-reviewed or Author Final version), it may differ from the Final Published version. When citing, ensure that you check and use the publisher's definitive version for pagination and other details.

### General rights

Copyright for the publications made accessible via the CityU Scholars portal is retained by the author(s) and/or other copyright owners and it is a condition of accessing these publications that users recognise and abide by the legal requirements associated with these rights. Users may not further distribute the material or use it for any profit-making activity or commercial gain.

### Publisher permission

Permission for previously published items are in accordance with publisher's copyright policies sourced from the SHERPA RoMEO database. Links to full text versions (either Published or Post-print) are only available if corresponding publishers allow open access.

### Take down policy

Contact [lbscholars@cityu.edu.hk](mailto:lbscholars@cityu.edu.hk) if you believe that this document breaches copyright and provide us with details. We will remove access to the work immediately and investigate your claim.

© ACM 1994. This is the author's version of the work. It is posted here for your personal use. Not for redistribution. The definitive Version of Record was published in ECA '94: Proceedings of the conference on Ethics in the computer age, <http://dx.doi.org/10.1145/199544>.

# COMPUTER ETHICS AND TERTIARY LEVEL EDUCATION IN HONG KONG

Eva Y.W. Wong  
Patricia W. Wade  
Robert M. Davison

Department of Information Systems  
City Polytechnic of Hong Kong  
Tat Chee Avenue  
Kowloon, Hong Kong

Tel: (852) 788-8510  
Fax: (852) 788-8694  
E-Mail: isew@cityu.edu.hk

## *Abstract*

This paper seeks to highlight some ethical issues relating to the increasing proliferation of Information Technology into our everyday lives. The authors explain their understanding of computer ethics, and give some reasons why the study of computer ethics is becoming increasingly pertinent. The paper looks at some of the problems that arise in attempting to develop appropriate ethical concepts in a constantly changing environment, and explores some of the ethical dilemmas arising from the increasing use of computers. Some initial research undertaken to explore the ideas and understanding of tertiary level students in Hong Kong on a number of ethical issues of interest is described, and our findings discussed. We hope that presenting this paper and eliciting subsequent discussion will enable us to draw up more comprehensive guidelines for the teaching of computer related ethics to tertiary level students, as well as reveal some directions for future research.

## 1. INTRODUCTION

We are living in the information technology (IT) age. IT has proliferated in many walks of life, and the success of many businesses today depends on people who are computer literate.

Many colleges and universities both in Hong Kong and overseas, with the intention of making their graduates computer literate and thus more marketable, have introduced optional or mandatory courses in their curricula to provide knowledge of computer and information technology to undergraduates and postgraduates [19]. Some courses have even stipulated that ownership of a computer is a precondition for registration on the course. As society is increasingly dependent on computers, it is also increasingly concerned with the social costs and benefits of using computers. Computer ethics and related issues such as software piracy, unauthorised access and use of computer systems, and privacy are becoming increasingly relevant topics of study. As teachers in the discipline of Information Systems, we guide our students along the road of computer literacy; thus, it must also be our responsibility to make our students aware of the ethical implications and the associated responsibilities a computer user must inevitably bear.

The Department of Information Systems (IS) of the City Polytechnic of Hong Kong (CPHK) has the responsibility of teaching introductory courses (or modules, as they are called in CPHK) in information systems and data processing to more than one thousand students each academic year. The authors are lecturers of the IS Department, who have been involved in the teaching of similar modules for over three years. Until recently, the topics of computer ethics and related issues had only been taught and discussed, if at all, in the final lecture and tutorial of a thirteen week semester. The idea is that by that time, students should have learned all the fundamentals about computer and information systems and so should be made aware of the associated social concerns and issues. Experience has shown that this is not an easy topic to teach since most students are either unaware of or uninterested in matters involving computer ethics. Out of interest, the first author conducted interviews with randomly selected groups of students to elicit their views on what constitutes ethical and unethical behaviour. It was hoped that these interviews would highlight specific issues which could help us in the enhancement of our teaching and discussion classes. We have recently completed a module for final year students who will major in IS that has involved examining the way that information is organised and manipulated in organizations. This module has examined ethical issues in some detail over a six week period. The current paper will discuss the term "computer ethics" both in a general context as well as with reference to the findings of the interviews. We hope that this will enable us to draw up more comprehensive guidelines for the teaching of computer related ethics to tertiary level students, as well as to reveal some directions for future research.

## 2. WHAT IS OUR UNDERSTANDING OF COMPUTER ETHICS?

Longman's Dictionary of the English Language defines ethics as the "study of the nature and basis of moral principles and judgements" and "a set of moral principles or values" [18]. According to Kallman and Grillo [4], "Ethics is the practice of making a principled choice between right and wrong". Ethics is also defined as "the rules of conduct recognised in respect to a particular class of human actions" [1]. From childhood, we have been taught by our parents and teachers that a certain kind of behaviour, the right kind, is acceptable to society, and the other, the wrong kind, is unacceptable to, or even punishable by, society. As responsible human beings, we have to make the right choices and do the right things according to ethical principles. Thus, facing ethical dilemmas and making ethical decisions are by no means new concepts.

"Computer ethics" is ethics regarding computer and information technology. Yet, is computer ethics different from any other kind of ethics? The literature [1,2,3,4,5] suggests that there is no distinct difference, but rather that the proliferation of use and capabilities of computers often impart a unique character to problems of computer ethics. Advancements in IT have presented us with new and more complex ethical challenges that force us to reevaluate ethical principles and practices [2,4]. It would appear that society has not had sufficient time and experience to develop appropriate ethical concepts that are generally accepted. This may also be attributed to the fact that computer science and technology, as we know them, have not only had a relatively short life span - some 40 years or so, but also they are in a constant state of change. Effectively this means that we need to continuously review our ethical standpoints so as to keep pace with new technological developments and capabilities. Furthermore information held in electronic, magnetic and optical form is not only more prone to unauthorised alteration and access, but also more fragile when compared to other media such as paper. Hence, it is perhaps not surprising that computer users prefer to expend considerable effort in protecting the integrity, confidentiality and availability of information stored on computers, rather than exerting their energy in tackling ethical matters [2,4]. As a consequence of the use of these advanced communication and storage media, there is much less face-to-face, intimate contact between people. Email, for example, provides textual communication, but this is a much leaner and more emotionless communication medium than that experienced in face-to-face situations [9]. This reduced richness has the effect of distancing people from the information, diminishing their sense of responsibility and changing their forms of and concepts of acceptable behaviour. Thus while we would consider it wrong to steal a bar of chocolate from a shop, it seems to be quite a different matter when we consider stealing information from a server through a network.

As computers become more widespread and essential in human activities, so there are changes in the way businesses are conducted and the patterns people follow in their everyday lives. Society is increasingly concerned about computer ethics and the difference between what is right, what is wrong, what is acceptable and what is criminal [6]. We are not so much interested in laying down the law in terms of right and wrong, but illustrating that there is confusion in the distinctions. The computer professionals, however, have two major difficulties in establishing a binding set of moral rules and ethics [3]. Firstly, as a relatively young field, the computer profession has had neither the opportunity nor the organisational capacity to develop ethical principles. Secondly, and more seriously, computer usage increasingly goes beyond the profession, i.e. is not restricted to professionals *per se*. For this latter reason, computer professionals may be tempted to argue that it is beyond their remit to propose comprehensive and standardised ethical values that should be universally applied. If computer professionals, these include people in the business, scientific and academic communities, who have the time, training or disposition to test and evaluate the social costs and benefits of computers, are not ready to take up the challenge, to whom else can we entrust this important job?

As more people become computer literate, so more people who are not bound by any professional code of, or even awareness of, ethics are using computers. As computing educators charged with the responsibility of helping and enabling more people become computer literate, the concern is not so much with the abilities of the students to know, use, understand and appreciate the computer. Rather, the issue is how should we teach them so that they are at least aware of the ethical dilemmas and consequences of actions that they are already and certainly will be facing with increasing computer use? Examples of these dilemmas include making a pirated copy of other people's programs, keeping personal data of other people for profit or without the consent of the individuals concerned, and balancing society's "need to know" against the individual's "right to privacy". These issues were explored in the interviews conducted with tertiary level students in Hong Kong, and our findings will be discussed in a subsequent section of the paper. However, aside from these dilemmas of use and abuse of computer systems and related data, there are other ethical issues to be explored, not least of which are questions relating to software development, the nature of the computer systems we build, and their impact upon society. These questions need to be explored in future research. As teachers, an important issue to be resolved is how should we teach our students so that their decisions - whether we personally agree or disagree

with those same decisions - will be based on sound and acceptable ethical principles? With the approach of 1997 when Hong Kong will revert to Chinese sovereignty, the hunger and demand for technology will inevitably increase. China will want to continue to expand economically using Hong Kong as an important bridge over its technological gap, yet there may perhaps be even less time to worry about social and ethical issues involving computers. Thus, these issues are pertinent and sensitive, and must be on our agenda for discussion at the present time.

### 3. STUDENTS' VIEWS AND OPINIONS

We will now present the findings of some research into students' understanding of ethical principles. Four ten-member groups of students - two postgraduate, two undergraduate - were interviewed to find out their ideas and understanding of ethical principles on three issues of interest:

- software piracy;
- the transfer of personal data for commercial use;
- the retention of personal data by the state for national security purposes.

The postgraduate students are enrolled on a part-time management development programme. They all have full-time employment and many of them have direct or indirect use of computers in their daily work. The undergraduates are final year students of the degree course Bachelor of Arts in Information Systems (BAIS) and so belong to the new breed of IS professionals who will hopefully bridge the gap between computer applications and business functions [7]. The interviews were conducted during normal tutorial sessions, with the atmosphere and discussion that are usual in tutorial classes. These interviews took place before the 6-week ethics sub-module referred to above.

#### *Software Piracy*

On the matter of software piracy, the opinions of both the postgraduate and the undergraduate students are very similar. Not a single student feels that duplicating software for private use is wrong or unethical. As far as they are concerned, the copied software is not used for monetary gains, they are definitely not stealing, they are only using the software to learn to use the computer. As long as a properly purchased copy is owned either by their companies or CPHK, making extra copies for use at home is totally acceptable. Had they had to pay for the software, they would not have bothered to use it at all, they argue, thus the copyright holder of the software is not losing anything. They perceive that the copyright holder may even benefit from this situation. As the students become more familiar

with the software through private use, they may recommend it to their companies which will definitely purchase proper copies, thus boosting sales of the software. It is particularly difficult to present any counter argument because the students insist that as long as no money is involved with the pirated copies, using them privately is moral, ethical and perfectly acceptable.

We can argue that the students' position is somewhat naive. They do not perceive that money is involved, but in fact this is only because they do not spend it. In the US, the software industry loses \$2 billion annually through domestic piracy. Additionally, international piracy costs the software industry an extra \$4 to \$5 billion in lost revenues each year [15]. Thus the manufacturer/distributor of the software may well prefer not to make a loss over not making a gain. Unfortunately, we can expect that the students will perceive that since everyone else pirates software there is no reason why they should not either. How can everyone be wrong? In fact, this belief ties in with the contractarian school of moral yardstick in that, if everyone should act that way, it is ethical [16]. Furthermore, there tends to be little enforcement of copyright issues in Hong Kong. This is not the domain of the police, but of the Customs and Excise department of the government. Given the fact that prosecutions for software piracy are relatively few and far between, so society may even be seen as if not actually condoning these activities, then at least accepting them as normal, and so by correspondence - ethical.

#### *Transfer of Personal Data for Commercial Use*

Hong Kong is an important financial, commercial and industrial centre in the rapidly developing Pacific Rim region and IT is used extensively in many businesses. If the personal data of an individual are stored in the computer system of one firm, the chances are that this data will be transferred, duplicated and stored on computer systems of firms in related or other businesses. As data protection legislation is not yet in place in Hong Kong [8,10,11], individuals have no way of checking whether their data are held in computer files or whether the data are correct. Furthermore, businesses can transfer and exchange personal data for profits without the consent of the individuals involved. In fact, the individuals do not have to be informed at all that their data are on computers. This situation was described and put to the students for discussion.

The reactions to this matter vary between postgraduate and undergraduate students. The postgraduates unanimously find this situation unacceptable: businesses making profits out of individuals in this way is unethical. Individuals do not benefit from this at all; in fact they may be harmed as the data may be incorrect or inaccurate. At the very least, some students complained that they have been inundated by "junk mail" from firms they

have never heard of, and wonder how these firms got their details. The core feeling is that if businesses achieve monetary gains from such ventures, then individuals, at the very least, should be informed. The undergraduates have a different point of view. If business is to prosper, then the free flow of data, personal or otherwise, must be allowed. If any restrictions are to be placed on this free transfer, they should be minimal. They do believe, however, that individuals should be made aware of this situation. As for the "junk mail", some students suggested that it is an enhancement of their social status that their names actually got onto the mailing lists of some firms. This response is totally unexpected. It will be discussed below in the context of face and the need for social recognition.

#### ***Retention of Personal Data by the State for National Security Purposes***

In Hong Kong, people who can legally live and work here have to carry their Hong Kong Identity Cards (HKIC) with them at all times wherever they are within the territory. The Royal Hong Kong Police Force is empowered to stop and demand the HKIC from anyone in the street. From an HKIC, the personal data of any individual can be quickly and easily verified by computers. The rationale behind such measures is that illegal immigrants (mostly economic migrants from less prosperous regions of Asia) can be swiftly identified and removed from the territory. The retention and use of personal data of its citizens on computers by any country inevitably has serious ethical implications. As the interviewees are tertiary level students, some of whom are postgraduates, they are likely to be among the most highly educated citizens of Hong Kong, thus their ideas and opinions on this matter are of significant interest. Again both the postgraduates and undergraduates expressed similar opinions: "The ends justify the means" is the predominant view.

According to the students, in order to maintain law and order in Hong Kong and to assure continuous prosperity, the problem of illegal immigrants must be dealt with effectively and efficiently. If this means that everyone has to carry his/her HKIC, and has his/her personal data stored on computers, so be it. For the good of the community, they are prepared to accept and comply with such measures. Some of the students suggested that it may be due to the intrinsic nature of Chinese people to obey and follow rules of the government, or it may be the effect of colonialism that the people of Hong Kong, in general, do not consider this measure as a serious erosion of their privacy or human rights. This view of accepting the rule of law, as well as accepting *de facto* norms, is supported by the literature.

Bond and Wang [12] note that in Chinese culture, there is always "a concern for interpersonal relationships,

and that such relationships are characterized by hierarchy and interrelatedness... The emphasis here is on being prudent, on not disrupting present relationships". We can relate this prudence and dislike for disrupting relationships to the students' attitude of respect towards authority. If they do disrupt the relationships, then the likely result is chaos, which is inimical to prosperity and safety. Hence, it is better to conform to what is commonly accepted by society - the existing relationship with the law in this case, i.e. not complaining about HKIC checking - so as to maintain a harmonious society. There is, however, a paradoxical element to the acceptance of the rule of law. Metzger [13] notes that while there is a "culturally widespread pattern... of awe for authority figures (there was also) a feeling of admiration for those autonomously able to defy authority". This perhaps correlates with the general acceptance of law and order, but also the occasional "getting away with it" - software piracy in our case. We have not specifically examined these constructs in our research, so it is inappropriate to generalise further at this stage. However, these ideas may prove useful in future research.

#### **4. DISCUSSION AND CONCLUSIONS**

Our interviews have produced some interesting and not altogether expected findings. We are reluctant, for a number of reasons, to state that the ethical values of the students, as described above, are categorically wrong. To do so would, perhaps, be to deny the point about ethical teaching. Our aim is to make students aware of issues, to explore them and to reason what principles should be applied in each case. In the current environment and culture of Hong Kong, it is considered honourable to follow rules and regulations and to make complaints or disgruntled statements as infrequently as possible. Although we know that it is unethical to copy others' programs without their permission, whether it is for private or business use, the students argued that nobody is hurt or losing anything, so how can it be wrong? The argument is not altogether convincing to us, as argued above, but it evidently is to the students, and so they have a principle, a standard. Their beliefs and attitudes are deeply rooted and will not change easily [17]. Indeed, is it really our responsibility to change them? Are we teaching ethics or legal issues? In reality, we may combine and confuse the two - there is likely to be substantial overlap, but still there will be grey areas where according to the word of the law a certain behaviour is *illegal* but possibly ethical nonetheless. Software piracy is but one example.

The difference in opinion between the postgraduates and undergraduates on the issue of "junk mail" indicates a rather mindless trend on the part of the undergraduates: improved "perceived" social status is seen to be good. Yet some people do prefer to maintain a low

profile and hence may prefer to reduce their "perceived" social status. It may also indicate immaturity of the undergraduates that they appreciate any increase in social status, no matter where it comes from. This need for social recognition is not altogether puzzling. In a society where groups are pervasive, there is little room for individualism: children are educated as group members, discouraged from playing alone, encouraged to conform to group norms, etc. [14]. By the time the undergraduates have matured, they will encounter the discomforts of endless junk mail and their views can be gradually expected to change.

It seems that the general teaching pattern of spending one lecture and one tutorial on ethical issues, although stimulating in nature, is inadequate when we consider the enormity of the ethical domain and so the amount of time that we need in order to stimulate the students' awareness and hopefully to establish sound ethical principles. A different strategy would be to integrate ethical principles into the subject matter of the courses we teach, making students progressively more aware of computer ethics as those courses continue. Of course doing this means that major revisions in the organisation and presentation of the materials of the course are necessary. This will involve considerable expenses of both time and energy. Alternatively, we can devote a number of weeks of a course to a more wide-ranging discussion of ethical issues using case studies and real life examples in our own society and not just from text-books and coursework. We have chosen this latter approach in one final year compulsory module for our students who major in Information Systems. The feedback that we have received so far is encouraging: it appears that students have a much wider appreciation of ethical issues and dilemmas. Students often ask us - is it ethical to behave in this way? or: is it appropriate and ethically acceptable for you to teach in this way?, etc. Although we cannot change their behaviour so quickly, we can succeed in making students think about issues in a more critical light. They may still pirate software, but if they stop and think about the ethics of what they are about to do, then we will have, in some small measure, succeeded in our purpose.

Thus, it is worthwhile to expend our resources and time and effort because we, as computer educators, do have the special responsibility of ensuring that future generations of computer professionals and users are aware of the social problems caused by computers and the ethical conflicts these professionals and users will face [3]. Furthermore, we should not be merely training technicians, but articulate information technologists. These technologists should be endowed with communication skills, interpersonal skills and should possess an appreciation of the social and ethical implications of information technology [3].

One direction of research which may help to tackle the problem of teaching ethical principles will be to develop a comprehensive questionnaire that can elicit attitudes on ethical issues before and after courses that have ethical components. Such a questionnaire will enable us to collect more accurate records and measures of the students beliefs and understanding of ethical principles and how they apply such principles to make ethical decisions or judgements. The questionnaire should be distributed to students of different education levels, races, backgrounds and cultures so that a comparison can be made to help us further in our enhancement of teaching. Our initial research has concentrated on issues of use, and abuse, of software and data. We also need to explore ethical questions relating to software development, and the impact of technology upon society.

## 5. REFERENCES

- [1] Johnson, D.W. (1984) *Computer Ethics: A Guide for the New Age*, The Brethren Press.
- [2] Parker, D.B., Swope, S. & Baker, B.N. (1990) *Ethical Conflicts in Information and Computer Science, Technology, and Business*, QED Information Sciences Inc.
- [3] Forester, T. & Morrison, P. (1991) *Computer Ethics: Cautionary Tales and Ethical Dilemmas in Computing*, The Press: Cambridge, Mass.
- [4] Kallman, E.A & Grillo, J.P. (1993) *Ethical Decision Making and Information Technology: An Introduction with Cases*, Mitchell McGraw-Hill.
- [5] Johnson, D.G. (1985) *Computer Ethics*, Prentice-Hall Inc.
- [6] Shelly, G.B., Cashman, T.J., Waggoner, G.A. & Waggoner, W.C. (1994) *Complete Computer Concepts and Windows Applications*, Boyd & Fraser Publishing Company.
- [7] Wong, E.Y.W., Jordan, E. & Chamberlain, D.M. (1992) The IFIP/BCS Information Systems Curriculum: Its Contribution to an Undergraduate Programme in Hong Kong, *Proceedings of the 5th UK Conference on Information Systems Teaching: Improving the Practice* 92, 139-143, 2-4 September.

- [8] Wong, E.Y.W. (1994) Data Protection Legislation in Hong Kong: A Practical Perspective, *Journal of Information Technology Management*, June.
- [9] Tan, B.C.Y., Wei, K.K. and Raman, K.S. (1993) Impact of Task-Medium Fit on Effectiveness and Efficiency in GDSS Supported Meetings, *IFIP WG 8.4 Conference*.
- [10] Lee, M. (1994a) Information Privacy Legislation: The Case of Hong Kong, *Working Paper*, Department of Information Systems, City Polytechnic of Hong Kong.
- [11] Lee, M. (1994b) Legal Aspects of Computer Crimes and Information Systems Security in Hong Kong, *Working Paper*, Department of Information Systems, City Polytechnic of Hong Kong.
- [12] Bond, M.H. and Wang, S.H. (1983) Aggressive Behaviour in Chinese Society: The Problem of Maintaining Order and Harmony, in: Goldstein, A.P. and Segall, M. (Eds) *Global Perspectives on Aggression* (58-74), New York: Pergamon Press.
- [13] Metzger, T.A. (1981) Foreword, in: Wilson, R.W., Greenblatt, S.L. and Wilson, A.A. *Moral Behavior in Chinese Society* (ix-xxv), New York, Praeger.
- [14] Harding, C. (1980) East Meets West: A Conflict of Values, *Hong Kong Psychological Society Bulletin*, **5**, 35-43.
- [15] Wasch, K. (1991) Don't Copy That Floppy: The Pervasive Problem of Software Piracy, *Chief Information Officer Journal*, **4**, 1, 39-43.
- [16] Bologna, J. (1991) A Framework for the Ethical Analysis of Information Technologies, *Computers & Security*, **10**, 303-307.
- [17] Wong, E.Y.W. (1994) The Teaching of Ethical Principles to Tertiary Level Students in Hong Kong, *Proceedings of the 6th UK Conference on Information Systems Teaching: Improving the Practice 94*, 27-31, 6-8 April.
- [18] Longman Group Ltd (1984) Dictionary of the English Language.
- [19] Wade, P.W. and Wong E.Y.W. (1994) A Proposed Study of Computer Literacy of First Year Undergraduates, *Proceedings of the 18th International Conference on Improving University Teaching*, 255-264, 12-15 July.