Ethics first or ethics last?

In the first chapter of this book the Hon Michael Kirby showed the difficulties of regulating new technologies, information and communications technology (ICT) included. These difficulties, we argued, highlight the need for a high level of professionalism in the ICT industry and sections two to six all focused on aspects of ICT professionalism. This section brings to the fore an important role for the ICT professional that has been in the background in at least some of the earlier papers but is discussed explicitly here; the ICT professional's role in decisions regarding the development and use of technology in society. Technical expertise is essential in this decision-making, and those in the industry are the ones with a responsibility to provide it. A topical example in Australia is internet-content control. ICT practitioners are not the only ones with expertise regarding what content should or should not be allowed, but they have the knowledge about what is technically possible in managing content, and what the likely technical consequences will be for particular actions.

Ethical considerations of technology in society raise methodological questions of how these considerations should proceed in this context, and who should be involved. Our view is that it is essentially an interdisciplinary activity. ICT practitioners, ethicists, social scientists, lawyers and policy makers, are all necessary if real progress is to be made. Another important point relates to the proper subject matter of ICT ethics, something that is raised in both papers in this section. According to Bernd Stahl and Simon Rogerson, 'A central problem of the ethics of technology is that it [the ethics] tends to arrive too late' and, in a similar vein, in the following paper, Philippe Goujon and Catherine Flick state that 'the strong push for technology development too often obscures the need for any deep ethical consideration before a technical project is funded, developed and deployed'. The question is, should ICT ethics be reactive, proactive or both? That is, should ICT ethics just respond to existing problems, try to anticipate problems or both respond and anticipate? A distinction needs to be drawn here between software engineering and the more general development of ICT. In software engineering, it is not new to hear calls for ethics to be considered early in the development process (see Gotterbarn's discussion of SODIS for more on this (Gotterbarn, 2008)), but, in ICT development in general, as in most technical development, ethical questions have generally been left until problems appear. This is our focus in this section.

Ethics, as we have just seen, can either react to the technology; that is, the ethics is done last, after the technology has been developed, or it can be proactive; that is, done first, before the technology is developed. This ethics first, ethics last approach raises, or seems to raise, what is commonly known as the Collingridge

dilemma (Collingridge, 1980). If the ethics is done before the development, it is difficult to predict what the impacts of it will be and, if done after development, it is difficult to control the impacts. Marvin Croy formulates the dilemma this way:

> Either a technology is in a relatively early stage of development when it is unknown what changes should be made, or a technology is in a relatively late stage of development when change is expensive, difficult and time-consuming.
>
> If the former, then control is not possible.
>
> If the latter, then control is not feasible.
>
> Therefore, either controlling technology is not possible, or controlling technology is not feasible. (Croy, 1996)

It is not possible because prediction is so unreliable and is not feasible because once the technology is developed change is difficult.

While this poses real difficulties, it is not the dilemma that it initially appears to be. Some prediction can be informative and some control after the development is possible. Furthermore, it is possible, to some extent, to slip between the horns.

The difference between reactive and proactive active ethics can be illustrated through a brief look at the history of the ethics of information technology (IT). Problems in IT ethics are not different or new, in the sense that they are different in kind from other ethical problems. Moral philosophy has been studied systematically at least from the time of the ancient Greeks, and the ethical issues in computing are part of this tradition. What is new and different is that the development and use of computers has raised old questions in new and different ways (Johnson, 2001), often creating what James Moor calls *policy vacuums* (1985). The work of the computer ethicists, then, is to develop policies to fill those vacuums. One example in computing is hacking. Breaking into someone's computer account is in some ways like breaking into someone's house, but there are interesting differences. It is a logical rather than a physical entering. Another is unauthorised copying of software, which is a bit like unauthorised copying of a book, and a bit like taking a television set, but there are significant differences. There are also questions relating to work and the loss or creation of skills, which arise in a unique way. This way of doing computer ethics is essentially reactive (Johnson, 2001: vii–viii), and this is an essential role of applied ethics in general.

When a proactive, or ethics-first, approach is taken, the emphasis is different. One is much more likely, and in fact it is necessary, to think carefully about what is wanted from the technology, and that involves thinking about what sort of

life one thinks is a good one. This approach means taking action that will guide the development of the technology in a particular manner. This proactive stance also highlights a more positive view of applied ethics. Ethicists are frequently seen as playing only a negative role, always criticising and attempting to hinder development. While this view is to some extent correct, it is not the only thing that ethicists should be doing. Technology clearly has a positive role. In many ways our lives are much better because of various technologies.

The argument here is that the ethics first model and the ethics last model are popular but poor solutions to a false dichotomy (see Weckert, 2007). ICT ethics is not something one can complete satisfactorily, either first or last, but something that needs be done continually as the technology develops and as its potential consequences become better understood. Ethics is dynamic in that the factual component on which it relies has to be continually updated. Norbert Wiener outlined this approach in 1960. Talking about automated machines, he writes:

> To be effective in warding off disastrous consequences, our understanding of our man-made machines should in general develop *pari passu* [in step with] with the performance of the machine (1960: 1355)

What he is suggesting is that if we wait until the technology has been developed, it may be too late to avoid 'disastrous consequences'. Predicting is hazardous and he does not suggest that these machines should not be developed on the grounds that they may produce undesirable consequences. Rather, the understanding must develop in step with the development of the machines. Similarly, the contention here is that understanding of the ethical questions must develop as the technology develops. This will be dynamic; partly reactive and partly proactive, continually returning to the technology to understanding how it is developing and what its actual or likely consequences are.

Ethicists must work with scientists and technologists to predict future problem areas. This is of course fraught with danger given the uncertain nature of prediction, but if care is taken, it is a useful and important activity. In many cases it is at least plausible that ethical problems will arise and that we can know something about what they will be like. Take the case of radiofrequency identifier device (RFID) chips. It is known that they have been developed much further than the passive chips currently used, for example, in libraries, and research is continuing. A new passive RFID chip is under development that will be able to be printed onto clothing, and paper, with a range eventually of close to 300 metres (Williams, 2010).

It is clear that developments in nanotechnology, particularly nanoelectronics, will lead to further miniaturisation of chips and that readers and other sensing devices will become more powerful and sensitive. Given these developments

and uses of the chips in other contexts, for example, warehouses, it is certainly plausible that libraries and other industries will extend their uses in ways that are increasingly threatening to privacy, and make them much more than fancy barcodes (Thornley, et al, 2011). This is not inevitable of course. We are not proponents of technological determinism, the view that technology will move on regardless of what we do. Given the extent to which the values of efficiency and productivity seem to override other values in the assessment of technologies and their uses, however, the pressures to extend their uses will be intense if it is seen to aid efficiency. Resistance might also be weak. In other areas privacy is eroded, a little at a time, in a way that is almost unnoticeable. Imagine if, about 20 years ago, before paying for groceries with credit cards was popular, the supermarkets had employed people to sit and watch all customers as they paid, and made a record of their purchases and their names and addresses. Most of us probably would have been a little concerned about this. Now it all happens automatically for those who pay by credit card and most people do not give it a second thought. This suggests that what the eye doesn't see doesn't really bother most people and what happens gradually also goes largely unnoticed.

It is here that proactive ethics comes in to play. The argument is not that RFID chips should not be used because of future dangers. The question to be asked is, is it morally responsible to use the chips in certain extended ways? And how can the technology be designed to mitigate the dangers? What kind of regulations need to be put in place to control the use of the chips? These are all legitimate questions for the proactive ethicist and their answers should feed into policy decisions about the future use of RFID chips.

In both papers of the section a central concern is with the relationship between ethics and technology and both argue that ethics has a role to play early in the process of technological development. Bernd Stahl and Simon Rogerson, the current and immediate past directors of the Centre for Computing and Social Responsibility at De Montfort University, acknowledge the difficulty of forecasting future developments, but, through an examination of European Union projects, isolate a number of ICT trends. These are: increasing computational power and decreasing size, new types of interfaces, network connection anywhere and anytime, and increased development of virtual places. These trends suggest ethical issues that require addressing or at least, serious consideration. Philippe Goujon, a continental philosopher and researcher, and Catherine Flick are critical of the sharp divide that exists between ethics and technology, and argue for ethical reflexivity; that is, the constant reassessment of ethical norms in response to the technology, to economics, to politics and to gaps in regulation. The context of development is important and the non-neutrality of ICT requires emphasis. Inadequacies in both current risk assessment and technology assessment are highlighted. Both papers relate their conclusions to ICT governance.

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Biographies

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Prof Dr Philippe Goujon Dir. de recherches: Habilité à diriger des recherches (HDR) — director of the Legit (Laboratory for ethical governance of information technology). He has authored articles and books on artificial life, self-organisation, thermodynamics, the complexity, biotechnology, genomics and also on the connection between science, techniques, and society. He has directed international conferences concerning governance, ethics and information technologies and edited books concerning the relation between governance ethics rationality and communication technology. He is a partner in four European projects the Etica project ('Ethical issues of emerging ICT applications), EGAIS project ('The ethical governance of emerging technologies — new governance perspectives for integrating ethics into technical development projects and applications'), and Consider project (Civil society organisations in designing research governance), and the project goldenworker (scientific expert). He is in charge of the ethical training for the European Commission. He is an expert for the European Commission and the French government.

Prof Simon Rogerson is professor emeritus at the Centre for Computing and Social Responsibility and member of the Department of Information Systems at De Montfort University. He joined the university in 1983, following a successful industrial career which culminated in being the computer services manager for Thorn EMI. At DeMontfort he has lectured, researched and consulted in the management and ethical aspects of computing. He has published and presented papers internationally about these issues. In 1995 he became the director of the newly formed Centre for Computing and Social Responsibility and conceived and co-directed the ETHICOMP conference series on the ethical impacts of IT. He is a member of the Parliamentary IT committee in the United Kingdom, a fellow of the Institute for the Management of Information Systems and a fellow of the Royal Society for the encouragement of Arts, Manufactures and Commerce.

Prof Bernd Carsten Stahl is professor of critical research in technology and director of the Centre for Computing and Social Responsibility at De Montfort University, Leicester, United Kingdom. His interests cover philosophical issues arising from the intersections of business, technology, and information. This includes the ethics of ICT and critical approaches to information systems. From 2009 to 2011 he served as coordinator of the European Union (EU) FP7 research project on 'Ethical issues of emerging ICT applications', ETICA (<http://www.etica-project.eu>) and from 2012 to 2015 he served as coordinator of the EU FP7 research project 'Civil society organisations in designing research governance' (CONSIDER, <http://www.consider-project.eu>).