Ethics in Health Informatics and Information Technology

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INTRODUCTION

This article discusses ethics in the fields of health informatics (HI) and information technology (IT). Ethics is a subject of study that is very relevant to the practice of health informatics and IT. We are increasingly at the mercy of computerised systems in our daily lives as well as in our health care. While the technology is developing ever so quickly, we have not been as attentive to making sure we are doing the right thing by society and individuals. Unfortunately, we will see that unethical practices and behaviours occur amongst HI and IT workers to this day. We will also see that perspectives of ethical practice have many similarities and some differences between the two fields. We will also see that ethics in each field has evolved differently.

This article is organised as follows: The Background section will discuss why ethical practice and studying ethics is important in IT and HI. Then the next few sections discuss the deontological basis for IT and HI ethics and examine a few of the many ethical codes that exist and relate them back to basic ethical principles.

We will not be specifically visiting the issue of law in HI and IT. This area is too broad for discussion here. Besides, ethics and the law are not the same and ethics is a precursor for law (Kluge, 2000). Ethical study encourages thinking through problems rather than strict obedience of the law or paying lip service. Such analytical thinking is often insufficient among IT and HI workers.

The objectives of this article are to emphasise the importance of ethics in IT and HI, for the reader to have an understanding of IT and HI ethics and be able to contrast the two, and to foster ethical practice.

BACKGROUND

By IT, this article means a broad definition of the application and support of information and communications technologies for a variety of organisations and people. We focus on IT since there are no separate ethical theories for the disciplines of information systems, computer engineering, computer science and software engineering (ACM/IEEE Joint Task Force for Computing Curricula 2005, 2006). Since many computing graduates specialise and work in IT, it is also useful to consider ethical practice from this perspective.

Why bother studying ethics in IT? Surely the goal of developing software or hardware is for the end product to meet a client's requirements and, once met, there are no other considerations and the developer moves on? Such attitudes were common in the early days of computing. As a theoretical science, computer science had no concern for ethics, just as mathematics does not have maths ethics (Reddy, 2004). IT was also influenced by engineering and shared some of the engineer's attitude: once the product is built, how it is used is the user's responsibility (Gell, 2001). The computer scientist was little more than a toolsmith (Brooks, 1996). Even in the 21st century, there are still critics of ethics education in the computing sciences (Gotterbarn, 2010). McBride believes that some IT workers of today are attracted to the profession due to the predictability of IT (McBride, 2012). It is this attitude that fosters treating ethics like if-then statements; if they have ticked the ethics box then they can be assured of being ethical without needing to think. The problem, McBride believes, is one of personal responsibility and acceptance of ethical behaviour, cornerstones of ethical practice and a theme of this article.

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Perhaps the most compelling reason to visit ethics in computing is the observation that computing can and does harm organisations and individuals. Computing is a social endeavour. Without humans and without human relationships, there is no need for computing. Therefore, the effects of computing can be inadvertent and cause embarrassment, fear, socioeconomic and financial loss, infrastructure damage and mental and physical harm. At the time of this writing, there are 107 software applications available from the Apple App Store and Android Market that encourage tobacco smoking e.g. depicting smoking as socially desirable (Nasser, Freeman, & Trevena, 2012). Daily, people encounter malicious software (viruses, Trojan horses, worms) and email spam. Cyber-bullying and software piracy is occurring right now somewhere. Internet search engines can falsely label someone a criminal, requiring lawsuit remedies (Butt, 2012).

In the health domain, software error killed at least four people who died from receiving excessive radiation doses (Sipior & Ward, 1998). Other forms of harm are insidious. Patients' right to their health data is being overruled by other concerns. Health data is being collected by one party and sent to third parties without patient knowledge e.g. pharmacy chains sent prescription details to a marketing firm in the US state of Washington, which were used for tailoring medication advertising (Lo & Alpers, 2000). Similarly, government employees have sold patient information to health maintenance organisations (Anderson & Goodman, 2002). Patient health data is also being sent to companies for insurance and employment decisions (Anderson, 2004). In this era of bioinformatics and genetic data, information about a future illness can lead to denial or modification of employment or insurance today. Similar to other areas of IT application, "getting the system working" rather than ensuring data security is a pressure on health information systems (Barber, 1998). Health websites linked to commercial products may not be clear about the independence of information they provide and can mislead vulnerable patients.

Another important reason for ethical focussing is that IT workers come from the general public and there have been concerns that younger generations who enter computer courses lack core ethical values (McBride, 2012; White & Pooch, 1994). Furthermore, despite increase in ethics training in computer courses, there is work that shows younger IT professionals are less aware of ethical issues than their seniors (McBride, 2012). Early software engineering students are often found to be indifferent to removing all bugs from their programs and resistant to software testing (Reddy, 2004). The popular media has also had an effect on IT ethical attitudes in general. Motion pictures such as the 1983 movie War Games glamorised computer hacking (White & Pooch, 1994). Today, hackers who circumvent software copyright protections in illegal file sharing activities carry themselves with pride. Some who use IT to expose the establishment have been praised e.g. Robert Morris highlighted network security holes by deliberately creating a worm (Bloombecker, 1990), Julian Assange created the WikiLeaks website to expose national government secrets (WikiLeaks, 2012).

Unfortunately, even HI professionals, who often come from a health background and therefore have been exposed to biomedical ethics, have been found wanting in ethical practice. De Lusignan et al found that understanding of legislation and procedure regarding health data protection was highly variable among health informaticians (de Lusignan, Chan, Theadom, & Dhoul, 2007). Worryingly, many working with health data did not feel personally responsible for data security even when such duties were in their job descriptions. The level of ethics training in health informatics courses has also been suboptimal with many courses failing to teach ethics (Espino & Levine, 1998; Ridings, 2002).

The problem of personal and professional accountability may be greater in the IT fields than in others. Conger et al found among graduate business students who worked with IT the view that access to sensitive information was permitted if there were inadequate safeguards protecting it, akin to entering a stranger's house because the doors are unlocked (Conger, Loch, & Helft, 1994). They cite the example of one student who worked for a credit card company and would spy on a celebrity's buying patterns. Victims are "faceless entities" (White & Pooch, 1994) and "abstract and difficult to identify" (Conger et al., 1994). The issue is indeed related to abstraction, where the IT user or worker becomes removed from the messy details of ethics. Abstraction is an encouraged skill in software development and allows IT workers to disengage and leave the ethical details to "high priests of computer ethics" with whom one must consult (McBride, 2012).