

Codes of Ethics: Discussion Paper¹

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INTRODUCTION

At long intervals the same question is raised: 'Are we technicians, scientists, users of technology responsible for the problems that are caused by the introduction of technology?' The answers given are not uniform, but the fact that the question is raised shows that we are beginning to realize that our technology is capable of, not only constructing the world, but destroying it as well. And we are becoming conscious of this destruction through the confrontation with environmental pollution, questions dealing with nuclear power, and more recently questions surrounding genetic engineering, such as DNA recombination, and the use of test-tube fertilization on older women.

At this moment of time this question is not only raised, but an answer is also expected. And very often, ethics are looked at with the full expectation of containing the answers. Through this, it is expected that norms in science, and solutions, be formulated as ethical codes. The same type of problems and questions are raised in relation to information technology. In this field, too, the claim for codes is increasing.

In this paper, we will go more deeply into detail on ethical norms, the possible solutions, such as ethical codes and codes of conduct, but specifically into the responsibilities that should be accepted in reference to a broad range of topics. The first debate on these responsibilities took place in the United States. It was called the Weizenbaum-Bell debate.

WEIZENBAUM-BELL DEBATE

In 1976 Joseph Weizenbaum provoked the computer world with his book *Computer Power and Human Reason*². In his book, he warns of the consequences that the computer may have for mankind. The consequences are, in his view, so overwhelming that two types of applications should not be allowed, or if so only with great care. The first is the application of the computer as a substitute for human functions which imply respect, understanding, and love.

These functions cannot and may not be substituted by the computer. The second is the application where the results are irreversible and the side-effects unpredictable.

Weizenbaum is repeatedly attacked on the basis of these statements, which many consider to be moral judgments. On the other hand, Weizenbaum does not hesitate to criticize those who, in his mind, are embracing technology without taking the possible consequences of it into consideration. These viewpoints to an extent colour the Weizenbaum-Bell debate, which received a great deal of attention in the early 1980s³.

The discussion was started by Daniel Bell in a lengthy paper which was, in a way, the continuation of his book published in the 1970s⁴. It is his view that we are on the way to an information society based on the production and processing of information. Automation and communication are essential to processing and distribution. Of course the growing need for knowledge and information as strategic sources will have consequences for the post-industrial societies. It is ridiculous to hold the computer responsible for those consequences. Technology is purely instrumental and for that reason has only indirect effects. The consequences are dependent on the social and cultural factors which determine that need for information.

Weizenbaum does not agree with this opinion and states that the computer itself has direct consequences which should be discussed. These consequences are irreversible for mankind and as a result, people blame the computer and do not accept their own responsibilities. The computer directly influences society, and scientists and appliers of technology should take the responsibility for this. He asks: 'Just what are the responsibilities of the mere technicians, or of engineers or scientists, in the information society?'

In reply to this, Bell accuses Weizenbaum of forcing an open door and trying to confront 'technologists' to 'humanists'. Once Weizenbaum took the step towards humanism, he was angry at those not sharing his enthusiasm. Weizenbaum is, in his view, a 'moral absolutist'. Technology has no direct influence on society, while the developments tend to be sociological and not technical. The consequences are determined by the applications of technology which are socially determined. In his view, Weizenbaum sees technology as being too much like a Golem, a clay monster which has come to life.

Dertouzos, in his reaction to Weizenbaum, is much milder, and he tends to compromise. Like Weizenbaum, he is of the opinion that the technologists should not be involved in technological research which attacks moral and legal norms. Furthermore, a dual policy is necessary: scientific discoveries must be stimulated and the applications controlled. Only then can we guarantee that no possibly useful applications are destroyed, while avoiding bad applications at the same time.

That this discussion was rather theoretical and offered no handle on concrete attitudes was shown some years later when David Parnas retired from the Star Wars programme for ethical reasons. A new debate on ethical norms was the result.

DISCUSSION IN THE NETHERLANDS

In February 1988, two students in computer science at the Free University of Amsterdam shocked the Dutch community of data processors. Upon acceptance of their Master degree, they took an oath. Their vindication was published in the newspapers, in one under the headline 'Hippocrates in Computer Science'.

In their vindication the students state that in the past science has had dramatic effects on

human welfare. Computer science can have the same effect: databanks restrict man's self-determination. The quality of life is therefore at stake. The students raise some ethical questions. Is it still acceptable that expert systems which replace human decision-making are built and sold? Is it justifiable to work on defense systems which experts know malfunction? In their view, these questions cannot be answered by technicians or scientists alone. We need a new set of ethics, as is postulated by David Parnas⁵. The Dutch students translated several ethical principles into the form of an oath: we will only work in the service of mankind and take man's right to self-determination as a general principle of study and action.

The vindication and oath were published in a leading journal for data processing⁶. This stimulated a renewed discussion on Codes of Ethics in the Netherlands.

An oath for professionals is not new. Some professions, jurists and physicians for example, have a long tradition of oaths. The most famous is the Hippocratic oath, in which all medical professionals swear to do their work in honour of mankind. In technical professions it is a new phenomenon, although in 1973, Charles Susskind published an adapted version for technicians⁷. Several ethical principles are formulated in this version.

From the renewed interest in ethics, codes of ethics and ethical oaths arises the question: what are ethics and which principles should be formulated?

ETHICS AND ETHICAL THEORIES

To Link and Ropohl⁸, ethics is the philosophical discipline which examines concepts, problems and theories of good, and lay the foundation for the notion of good action and good life on a rational base. Johnson⁹ defines ethics as 'theories (that) provide general rules or principles to be used in making moral decisions and, unlike our ordinary intuitions, provide a justification for those rules'. It is more than simply stating what people think is good or wrong. One should also be able to defend the claims and show why one is committed to them. Thus, ethics is normative in character.

Generally¹⁰, two ethical theories are distinguished: consequentialism or teleological theory and deontological or principle theory. Others¹¹ use for the same distinction the classical one between historical morality ('morale historique') and idealistic morality ('morale idéaliste'). Sometimes a third one is added, although it is seen by some to be a pseudo theory: ethical relativism.

Consequentialism refers to any type of ethical theories in which right and wrong are based on the consequences of an action. Utilitarianism is one form of consequentialism in which the basic principle is that everyone ought to act in ways which bring about the greatest amount of happiness for the greatest amount of people. Happiness is the ultimate good all creatures are seeking. This theory is strongly based on the English philosophical tradition of Jeremy Bentham and John Stuart Mill: every action must be weighed by the consequences it has.

Deontological theories put the emphasis on the character itself, and not on its effects. The right or wrong of an action is the intrinsic character of an action. When the principle of an action can be universalized, the action is good. Therefore, some actions are always good or wrong, no matter what the consequences are. Examples of these principles are: always tell the truth; never kill people whatever the situation may be. At the heart of deontological theories is the idea that individuals are of value and must be treated accordingly. Human beings differ from all other beings in that they have the gift of reason. This theory is strongly based upon

the theories of Emmanuel Kant, and especially his categorical imperative as expressed in his *Grundlegungen zur Metaphysik der Sitten*.

Ethical relativism, the third theory or pseudo theory is more negatively formulated. It denies that there are universal moral norms. Right and wrong are relative, depending on occasions, individuals and one's culture and society. 'In some societies infanticide is acceptable, in others it is considered wrong. In some societies, polygamy is permissible; in others it is not, and so on. Relativists also point to the fact that moral norms change over time so that what is considered wrong at the one time may be considered right at another.'¹²

FUNCTIONS OF ETHICAL NORMS

There is no uniformity in the functions of ethical norms. I will however attempt to go through it systematically based on functions mentioned in literature.

First of all, there is a general feeling that ethical norms for a specific profession make clear that a professional is not only responsible for the product, but also for the consequences of introducing it. The insight that a technician has responsibility greater than just for the technical and economical aspects was recognized decades ago. In the 1929 edition of the *Encyclopaedia Britannica*, Alfred Douglas Flinn writes that an engineer is obliged to watch the sociological, economical and cultural consequences of his work and technique in general. He has to help people in organizing their life so that the advantages will be optimal for everyone. This feeling of responsibility is especially strong when professionals and lay people are confronted with negative consequences (war, Tchernobyl, revolutionary technology such as DNA-mapping). Looking at some of the principles of ethical norms, this responsibility is broadly felt: towards society or the common good, employers/clients/system users, and colleagues.

A second function of ethical norms is seen as supplementary to legal and political measures. As Maisl¹³ states in a report for the Council of Europe, ethics are no substitute for law, but ethics are a back up to the law. They can be necessary both before and after legislation, since legislation cannot cover every detail. Before legislation they are the first step towards the introduction of a law; after legislation they can be used as a flexible instrument. Political and legal measures are too sluggish compared to the rapid development which characterizes information technology. 'The law also has great difficulty keeping up with change,' writes Roger Clarke¹⁴. As an example he points to the Australian Privacy Act. 'The Privacy Act, eventually passed in 1988, copes with the IT of 1970's, but not with the altogether more powerful technologies and applications of the 1990's (...).'

A third function of ethical norms is to make the general public aware so as to ensure that a public debate takes place. Stimulating awareness is the active component of a code in addition to the designation of responsibility for the consequences. Now science and technology have collective consequences in an increasing way, we need a collective attention for these consequences and, when necessary, collective action in cooperation with the public. Therefore, the public should be informed of the ethical norms and procedures.

A fourth function is the sociological function of 'belonging to a group with the same ideas' or more negatively formulated, a justification for doing things differently from those who are not part of the group¹⁵. It is an indication to the outer world that the organization is a mature one. It is a kind of professional status symbol. 'It is a set of guidelines recommended for the benefit of those concerned professionally with computers with the aim of achieving and

sustaining a high level of professional behaviour.¹⁶ Stated in another way, it is a part of what is defined as a professional.

‘A professional is an individual who has a high level of competence and adheres to high ethical standards in the application of that competence.’¹⁷ It is comparable to the guilds in the Middle Ages: protection of the standards and protection of the profession.

This function is the one that is most criticized. Sometimes that too much emphasis is on the profession and not on the responsibility for society. The fact that norms are formulated is used as an indulgence for bad conduct, as defense of a bad name or as an excuse for hiding the dirty linen.

A final function of ethical norms is specific to (international) organizations. A code of conduct can harmonize the measures already taken in the diverse organizations or countries. In many countries political and legal measures are taken to control the impetus of information technology, but the way and extent differ. Not only is there a large difference between developed and developing countries. In a small region like Western Europe, the differences in a specialized field such as privacy protection are so great that there is a need, even there, for an European Directive to harmonize existing and non-existent legislation.

To summarize, in general five functions of a code of ethics can be distinguished: responsibility, a flexible instrument supplemented to legal and political measures, awakening awareness of people, the status of the profession and harmonizing differences between diverse countries.

OPTIONS FOR ETHICAL NORMS

Throughout literature, there is a wide range of forms which ethical norms can take on. The most comprehensive list of forms is given by Cameron et al.¹⁸ They distinguish:

- Principles: generally statements which may provide international guidance, or act as a reference document, or provide a basis for the development of legal instruments in particular jurisdiction;
- Public policies: they incorporate aspects of acceptable behaviours, practices and standards;
- Codes of conduct: these usually incorporate ethical principles but tend to focus on behaviours, outputs and quality of service so that they are used to form the basis for the interpretation of substantive behaviours;
- Guidelines: they may be legal within a single jurisdiction and used to provide guidance, legal meaning and relevance, even though they are generally not enforceable;
- Legal instruments: these are generally the most enforceable, provided they are drafted correctly and the courts are sufficiently qualified to assess the matters brought before them.

In practice the most common form, with the exception of legal instruments, is as a code of conduct or a code of ethics.

THE NEED FOR INFORMATION TECHNOLOGY ETHICS

Information technology is influencing our daily life deeply. The manner of influence and its

consequences have been the subject of many studies¹⁹. Viewed globally, one can say that there are effects on all levels: the macro-level (societies as a whole), the meso-level (the level of organizations) and the micro-level (the level of the individual and family life).

At the macro-level one sees an increase in vulnerability, a shift in the concentration of power (so much so that a control state is feared), the gap between illiteracy and literacy, the gap between developed and developing countries, legal problems in general, i.e. copyrights on software, and computer criminality. At the meso-level, one sees the effects on working relations and work qualifications, problems concerning security and organisational changes as a result of introducing information technology, in general. At the micro-level, the attack on privacy is seen as one of the future's biggest problems in almost all technological societies. Other problems are the growing gap between the people and government, the growing impenetrability and powerlessness in relation to information technology.

Cameron et al.²⁰ state it very simply: 'We need IT ethics because:

- IT is a powerful and constantly evolving tool,
- IT permeates all aspects of our lives,
- IT dependency creates vulnerability on a large scale,
- IT evolution and usage outstrips the formulation and implementation of policy and legal instruments.'

Today's studies argue and claim for measures to diminish and control the negative effects: this is a result of the overwhelming influence of information technology in all sectors of society and especially their role in defense systems (Star Wars, Gulf War, SDI). In almost all cases the need for political and legal measures is propagated. Codes of ethics are seldom seen as appropriate means.

Apparently, the computer professional or organizations for professionals, and not the social scientist dealing with social implications, are asking for specialized codes which bind the professional or members of an organization. This has to be seen as a positive sign in a society which is becoming technocratic in the sense that all problems and solutions are seen as technical. The technician, in this case the data processor, is seemingly becoming aware of the consequences of the work he is doing. And it is only the computer expert who has the ability to judge it. 'In the end, the only person who knows the true nature of a new computer system, the depth of its technical protection, its potentials for misuse, and the intent of its users is the computer specialist'²¹. The result is a renewed claim for Codes of Ethics.

CODES OF ETHICS

As early as November 1966, the Council of the Association of Computing Machinery, one of the largest associations within the computer professions, adopted a set of guidelines for Professional Conduct in Information Processing.

In due course we shall see a continuing claim for codes of ethics for all sectors of society, especially in those areas where the consequences of professional activities are visible to the public. At the moment there are codes of ethics for specific professionals (computer scientists, journalists, scientific researchers, ...), for organizations of professionals (ACM, BCS, ...) and for international sectors (direct marketers, mail order companies, ...).

Although the purposes and functions of the codes are usually the same, the contents and

wording differ enormously. Some codes are very detailed, whereas others are worded more broadly. Some are formulated by professionals (one-sided), whereas others are the product of a close cooperation with the public or clients (two-sided). In some, the public is the target group, whereas others are multidirected: towards clients, the public and the employees. Some have clear forms of sanctions and penalties, whereas others are more or less free of obligations.

In general, the impression is that the contents and wording are strongly related to the character and size of the organization: the smaller and homogeneous an organization, the more detailed and specific the code. And in the opposite case, the more complex and heterogeneous the organization, the more general and broad the codes.

OBJECTIONS TO THE PRESENTED CODES

Codes of Ethics have been the subject of discussion in several publications²². In general the following comments have been made.

A first point of criticism is that most of the codes are too detailed. Taking the draft code of Sackman as an example²³, starting with a four-fold ethical domain is also results in a four-fold target group. The description of the four domains is also very detailed. The result is a product that duplicates other measures and aims from other organizations. There is a clear duplication within property, public, telecommunication and criminal law and of the work done by labour unions and work councils in some countries.

A second point of criticism is strongly related to the first. A detailed and rather strong code tends to be static and inflexible. For a very dynamic science such as Information Technology, the question is raised: Is it what we need? Changes in IT and the introduction of new technologies influencing individuals and societies in unexpected ways demand a code that can easily be adapted.

A third point of criticism is that most of the codes are the product of technological thinking in developed countries and are neglecting differences in cultural and social values. For Vehviläinen the draft code of Sackman, prepared through a questionnaire, is biased towards the university professors and other research oriented people, with an European focus. She has a more general point of criticism: 'The computing associations' ethical codes represent that we feminists have come to think of as masculine values, including for example a sharp distinction between the expert and non-expert. Ethical codes are created by male professionals and by male scientists.'²⁴

Another point of criticism is that in some codes there is a lack of disciplinary rules which are necessary in case members' activities are in conflict with the letter and spirit of the code.

Related to the proposed draft code of Sackman, the most important point of criticism has been stated by Sizer²⁵. In a provocative publication he asks for whom the code is produced, or in other words who the members are that have to subscribe the code. Based on the IFIP Statutes and Bylaws, he quotes part of article 3 (Membership). In this article the following members are distinguished:

- Full Membership: a national scientific or technical society, or group of such societies;
- Corresponding Members: one organization or institution of a country (not already a full member) interested in information processing;

- Affiliate Members: any international organization, professional or governmental, having interest in the Information Processing;
- Honorary Members: an awarded person who has earned exceptional merits in furthering the aims and interest of the Federation;
- Individual Members: one admitted in recognition of his contribution to the Federation and the Information Processing field. This number shall not exceed one fifth of the number of Full Members.

The status of IFIP is clear to Sizer. It is not an organization of individuals, but of national Societies. These would have to subscribe to an IFIP-code! Moreover, any code could even be in conflict with IFIP's article 1 (Name and Aims), in which it is stated: 'IFIP does not take any account of the political, social or economic aspects of its Member organizations because IFIP is totally dedicated to the transfer of scientific and technical information and experience'.

As a result, Sackman has unfortunately made a methodological mistake by consulting the individual participants of IFIP and not the members, i.e. the national Societies.

INTERPRETATION OF THE OBJECTIONS

Looking at the criticism, there is some validity to the ethical theories cited earlier. Some of the criticism, especially on the draft code of Sackman, is that the code is too detailed and neglects cultural and social differences. For an international organization, as IFIP, formulating a code acceptable for all members will be an impossible task. There is clearly a certain ethical relativist thinking behind the following comment: it is impossible to formulate an ethical code for once and for all. Cultural and, especially, political differences make this impossible.

Although I agree in some sense with this type of criticism, the ethical relativist thinking is in my opinion strongly related to one of the ethical theories, consequentialism. The way in which the results, in this case of IT are seen depends on the cultural and political situation in various countries. In this sense there are differences between developed and developing countries, between East and West, between democratic and less democratic societies, and all of them possible members of IFIP. This situation is even more problematic, now it is clear that members of IFIP are not individuals, but primarily national scientific or technical societies, one per country.

This does not mean that IFIP should do nothing. It only means that it is impossible for the proposed code to become an IFIP code. IFIP needs general principles that will be accepted by all national societies. In my view these principles must consist of deontological statements. One of the statements may be the suggestion that every national society produces a national Code of Ethics, taking into account what has already been discussed by many national constituencies.

¹¹ Many thanks to the members of IFIP-WG9.2 who have commented on the first draft of the paper.

² WEIZENBAUM, Joseph, *Computer Power and Human Reason, From Judgment to Calculation*. San Francisco: W.H. Freeman and Company, 1976.

³ Most extensive are the papers in: DERTOUZOS, Michael L. and MOSES, Joel [Eds.], *The Computer Age: A Twenty-Year View*. Cambridge, Massachusetts, and London, England, The MIT Press, 1980. The following papers are of interest: Daniel BELL, The Social Framework of the Information Society (pp. 163-212),

- Joseph WEIZENBAUM, Once More: The Computer Revolution (pp. 439-459), Daniel BELL, A Reply to Weizenbaum (pp. 459-463) and Michael L. DERTOUZOS, Another Reply to Weizenbaum (pp. 463-465). Except the last one, the papers are also published in: FORESTER, Tom [Ed.], *The Microelectronics Revolution*. Oxford: Basil Blackwell, 1980, pp. 500-573.
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- ⁵ PARNAS, D.L., Why I Won't Work on SDI: One View of Professional Responsibility, in: *CPSR Newsletter*, vol. 4, no. 2, spring 1986.
- ⁶ *Informatie*, vol. 30, no. 6, 1988.
- ⁷ SUSSKIND, Charles, *Understanding Technology*. Baltimore and London: The John Hopkins University Press, 1973, 118. We reproduce this oath in this book.
- ⁸ LENK, Hans und ROPOHL Günter, Einführung: Technik zwischen Können und Sollen, in: Hans LENK und Günter ROPOHL [Hrsg.], *Technik und Ethik*. Stuttgart, Philipp Reclam jun., 1987, pp. 5-22.
- ⁹ JOHNSON, Deborah G., *Computer Ethics*. Englewood Cliffs, New Jersey: Prentice Hall, Inc. 1985. op. cit., p. 6.
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- ¹² JOHNSON (1987), *Computers Ethics*, op. cit., p. 8.
- ¹³ Council of Europe, Committee of experts on data protection (CJ-PD), Legal problems connected with the ethics of data processing. Study by Mr. Herbert MAISL, University of Orléans. Strasbourg, 29 August 1979.
- ¹⁴ CLARKE, Roger, Social implications of IT - the professional's role, in: *The Australian Computer Journal*, vol. 22, no. 2, May 1990, pp. 27-29.
- ¹⁵ BURKERT, Herbert, The Ethics of Computing?, in: J. BERLEUR, A. CLEMENT, T.R.H. SIZER and D. WHITEHOUSE [Eds.], *The Information Society: Evolving Landscapes. Report from Namur*. New York: Springer Verlag-Captus University Press, 1990, pp. 4-19.
- ¹⁶ NIBLETT, G.B.F., *Digital information and the privacy problem*. OECD Informatics Studies, no. 2. Paris: Organization for Economic Co-operation and Development, 1971. op. cit., p. 22.
- ¹⁷ DPMA Code of Ethics and Standards of Conduct for Information Processing Professionals, Viewing the need, development, in: *Supplement to Data Management*, May 1981. op. cit., p. 26A.
- ¹⁸ CAMERON, Julie, Roger CLARKE, Simon DAVIES, Agnes JACKSON, Mark PRENTICE and Brian REGAN, Ethics, Vulnerability and Information Technology (IT), in: *Information Processing 92*, vol. II: *Education and Society*, R. AIKEN ed., Proceedings of the IFIP 12th World Computer Congress (Madrid, September 7-11, 1992), Elsevier Science Publishers B.V. (North-Holland), 1992, pp. 344-350.
- ¹⁹ It is impossible to be complete. We will mention for sake of orientation the most important and complete ones. FORESTER, Tom [Ed.], *The Microelectronics Revolution*. Oxford: Basil Blackwell, 1980; DERTOUZOS, Michael L. and Joel MOSES [Ed.], *The Computer Age: A Twenty-Year View*. Cambridge, Mass. and London: The MIT Press, 1980; BJØRN-ANDERSON, Niels, Michael EARL, Olav HOLST, Enid MUMFORD [Eds.], *Information Society, for richer, for poorer*. Amsterdam, New York, Oxford: North Holland Publishing Company, 1982; BERLEUR, J., A. CLEMENT, T.R.H. SIZER and D. WHITEHOUSE [Eds.], *The Information Society: Evolving Landscapes. Report from Namur*. New York: Springer Verlag-Captus University Publications, 1990; DUNLOP Ch. and KLING R., *Computerization and Controversy, Value Conflicts and Social Choices*, Academic Press Inc., 1991.
- ²⁰ CAMERON, Julie et al. (1992), Ethics, Vulnerability and Information Technology. op. cit., p. 344.
- ²¹ ROTHMAN, Stanley, Charles MOSMANN, *Computers and Society, The technology and its social implications*. Chicago, Palo Alto, Toronto, Henley-on-Thames, Sydney, Paris, Stuttgart: Science Research Associates, Inc., 1976. op. cit., p. 426.

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- ²³ See 'A Draft Code of Ethics', by H. SACKMAN. Reproduced in this book.
- ²⁴ VEHVILÄINEN (1992), Exploring the Ethics in Computing, op. cit., pp. 315-316.
- ²⁵ SIZER, Richard, IFIP Code of Ethics. Draft for discussion by WG9.2 on January 11-12, 1992 and subsequent paper 'An IFIP Code of Ethics - Some of the Issues Involved', in: *Information Processing 92*, vol. II: *Education and Society*, R. AIKEN ed., op. cit., pp. 351-354. Other criticisms have been brought by the Austrian Computer Society (see in this book).