

# Recommendations Regarding Codes of Ethics / Conduct for IFIP Computer Societies

*International Federation for Information Processing (IFIP)  
General Assembly, Hamburg, September 6th, 1994*

## 1. WHY CODES OF ETHICS OR OF CONDUCT / OR GUIDELINES?

‘Why do we need codes of ethics or codes of conduct today?’ International Federation for Information Processing (IFIP) member societies, organizations like the Council of Europe, and distinguished experts have already explained it sufficiently. Their reasons, as well as the process of reflection inside IFIP, are reviewed in this book.

We gather here some recommendations which have emerged from several discussions and proposals<sup>1</sup>.

## 2. IFIP’S ROLE: WHAT CAN IFIP DO?

IFIP does not intend to provide the IFIP national societies with precise guidelines for codes, but to advise them to consider the recommendations outlined below when writing or updating their specific codes. IFIP cannot actually state what ‘ethics’ the national societies should espouse. It can, however, outline that there are certain principles that all might want to consider and take account of in their codes.

In this book IFIP provides all the material needed for its member societies to consider: some 30 computer societies’ codes, their analysis, comments on the most important codes, the philosophical background of cultural diversity, and papers on some more sensitive questions.

In accordance with the diversity of histories, cultures, social and political backgrounds of IFIP member societies, IFIP regards it as essential that, when wanted or needed, codes of ethics or of conduct (or guidelines) should always be developed and adopted within the member societies themselves. IFIP offers its expertise in assisting such developments, collecting and disseminating material about established codes, and organizing international debates on further developments.

### 3. METHOD OF APPROACH

The analysis of the subject presented in this book shows that we have to be aware of the distinction between ‘codes of ethics’ and ‘codes of conduct’. The studied codes show a large heterogeneity in their titles and no systematic relationship between the title and the content.

A code of ethics might be favoured when a national society’s main purpose is to develop a ‘mission statement’, giving visions and objectives. Some commentators consider that the expression, code of ethics, is related to codes which are oriented more toward the public or society as a whole. The expression ‘code of conduct’ seems to be related more to the ‘computing profession’. This distinction has to be treated with care<sup>2</sup>.

Today, certain people who have been working for a long time on this issue think that ‘the rules of conduct have to reach, beyond the well structured body of computer scientists, the larger circle of computer users. We must shift from a deontology of informaticians to an objective deontology of informatics under the control of the law<sup>3</sup>.’ From this perspective, codes are seen more as preparing for the law or specifying it than as self-regulatory instruments, and are written to address a large audience.

We suggest that, as a first step, the IFIP national societies examine the analysis of the computer societies’ codes already in existence which constitutes the core of this book. We first outline the content of these codes, as well as some procedural questions (see 3.1 and 3.3). A complementary approach could then be considered, based essentially on the analysis of other proposals (see 3.2). Other contributions to this book include certain important features like the ethical traditions and schools, some computer-specific ethical issues, and the meaning of ‘professionalism’ and its weaknesses: they will surely help to avoid pitfalls when writing or updating a code.

#### ***3.1. Content of the Computer Societies Existing Codes***

We suggest examining the main fields of responsibility as they appear in the analysis of the 30 codes of computer societies<sup>4</sup>. Five main topics are developed in nearly all the codes<sup>5</sup>:

- *Respectful general attitude* [/30]

This attitude includes: respect for the interests or rights of the people involved [15], respect for the prestige of the profession [11], respect for the interests or rights of the public [10], and respect for the welfare, health of the public and for the quality of life [10]. Sometimes it also includes: respect for the reputation of the computer society [8], respect for the quality of life of the people involved [6], respect for the public in general [6], respect for the environment [6], and respect for the differences of the public [4].

- *Personal (/institutional) qualities, such as conscientiousness, honesty and positive attitude, competence and efficiency* [/30]

In practice, the terms ‘conscientiousness’ and ‘honesty’ are frequently encountered under the expressions ‘acceptance of responsibility’ [19] and ‘integrity’ [26]. Moreover, appeals to ‘respect for requirements or contracts or agreements’ [14] and to ‘conscientious work’ [11] are also frequent. Other topics relating to ‘conscientiousness’ and ‘honesty’ are: ‘professionalism’ [7], ‘credit for work done by others’ [6], ‘good faith or goodwill’ [4], ‘concern to meet overall objectives’ [3], and the ‘courage of one’s convictions’ [1].

With regard to the expressions ‘competence’ and ‘efficiency’, two other terms are very common: ‘professional development and training’ [19] or ‘limitation of work to the field of competence’ [18]. Two others are also worth noting: ‘general competence’ [13] and ‘effectiveness or work quality’ [12].

- *Promotion of information privacy and data integrity* [31]

‘Confidentiality’ [22] is required by nearly all the general codes of the IFIP societies [13/15]. ‘Privacy in general’ [14] and ‘respect for property rights’ [12] are appealed to quite often. Three other topics, ‘no computer crime, no information piracy or misuse’ [7], ‘data integrity’ [6] and ‘data minimization’ [2], are less frequent<sup>6</sup>.

- *Production and flow of information* [31]

‘Flow of information to involved parties or people’ is required by the majority of the codes [23]. ‘Information to the public’ [16] is also insisted upon. Half the whole set of codes call for ‘comprehensive information’ [14]. Several codes also ask for the ‘production of tests, evaluations, results or specifications’ [7] or for the ‘flow of information from the involved parties or people’ [7].

It should be noted that ‘information privacy’ and ‘free flow of information’ may become contradictory. This possibility of contradiction is noted both in this book and in the proposal of European Directive. Between the two concepts, some balance has to be found.

- *Attitude towards regulations* [30]

‘Regulations’ do not appear as a major theme. Less than half the codes require ‘respect for the code’ [13], ‘respect for the law’ [13], and ‘respect for IT and professional standards’ [12].

Few codes refer to ‘development of standards’ [5], of the ‘law’ [2], or of the ‘code itself’ [1]; some consider ‘sanctions’ against a breach of the code [9]. Regulation of the code itself is often taken into account outside the code, and is therefore considered in the section on the procedures (3.3.).

## 3.2. Other Proposals

As far as the content of codes is concerned, many authors insist on considering computer-specific ethical issues, since, in their view, most of the available codes are deficient in that respect (3.2.1.). According to the reflection proposed in this book, IFIP and computer scientists could provide their expertise to anticipate threats and dangers which could appear in specialized fields (3.2.2.). Others think it would be useful to include in the codes what has been suggested by international experts (3.2.3.). The reader’s attention is drawn to the Toronto Resolution where a group of academics have gone some way to listing a set of criteria to which codes might, in their view, conform (3.2.4.). The suggestion is also made to start from the identification of specific fields where ethical problems are raised (3.2.5.) and from the consideration of ‘central issues’ (3.2.6.). Finally, some broader scope issues mentioned in the Final Remarks are here repeated (3.2.7.).

### 3.2.1. Computer-Specific Ethical Issues

‘Computer-specific ethical issues arise as the result of the roles of computers such as:

- Repositories and processors of information. Unauthorized use of otherwise unused computer services or of information stored in computers raises questions of appropriateness or fairness.

- Producers of new forms and types of assets. For example, computer programs are entirely new types of assets, possibly not subject to the same concepts of ownership as other assets.
- Instruments of acts. To what degree must computer services and users of computers, data, and programs be responsible for the integrity and appropriateness of computer output?
- Symbols of intimidation and deception. The images of computers as thinking machines, absolute truth producers - infallible, subject to blame - and as anthropomorphic replacements of humans who err should be carefully considered.<sup>7</sup>

Recent books could also provide a list of what are considered 'computer-specific ethical issues'. Let us mention as possibilities<sup>8</sup>:

- Computer crime and security problems,
- Computer theft and piracy; intellectual property rights,
- Hacking and viruses,
- Lack of reliability of information systems and quality problems,
- Data storing and privacy,
- Artificial intelligence and expert systems,
- Computerization of workplace,
- etc.

### *3.2.2. Challenges for Computer Specialists*

Some authors suggest starting the analysis from the development of the technologies themselves:

- Specific regulation about privacy as provided by Computer Professionals for Social Responsibility (CPSR) on the National Information Infrastructure (NII) or on the National Research and Education Network (NREN)<sup>9</sup>,
- Consideration of the main features which mark the development of information technology, such as: standardization, interactive services, lack of openness, internationalization of data flows, and increased capacity<sup>10</sup>.

### *3.2.3. Suggestions Made by the Council of Europe*

The topics envisaged by the Committee of Experts of the Council of Europe present similarities with the presented analysis, but are stated in more general terms. They could be considered and sometimes updated<sup>11</sup>:

- Social responsibility: computer scientists' and professionals' responsibility vis-à-vis the employer and society as a whole itself,
- Personal competence and behaviour: initial and ongoing training, and especially providing computer scientists and practitioners with sufficient legislative information,
- Specific problems related to copyrights, program ownership, etc.,
- Confidentiality and secrecy: protection of privacy, professional secrets, material secrets, etc.,
- Security questions: protection against fraud, abuse, and the question of the security of data.

In one of its final reports on the deontology of informatics, the Council of Europe mentions some of the approaches adopted by its member States for controlling processing and the new areas of intervention: legal persons, non nominate data, systems' security, rules on exchange of information in society, and rules governing data banks<sup>12</sup>. It also notes that 'the present concept of data protection has proved to be too narrow and it is desirable to consider

problems connected with the distribution of information in society and the attainment of a better balance of access to information, without however dealing with the specific questions of the mass media, satellite communications, etc.<sup>13</sup> It increasingly seems that 'the theme of the protection of data is covering the whole of the human rights, and then the definition of the democratic framework itself.' Other sensitive domains are mentioned such as: direct marketing, social security, police files, protection of information in the field of employment, and decentralization in computer systems<sup>14</sup>.

Let us also mention the classification of 'computer crime', as proposed in 1989. It may suggest some more specific computer-related issues:

*Minimum List*

- Computer Related Fraud,
- Computer Related Forgery,
- Damage to Computer Data or Programmes,
- Computer Sabotage,
- Unauthorized Access,
- Unauthorized Interception,
- Unauthorized Reproduction of a Protected Computer Programme,
- Unauthorized Reproduction of a Topography.

*Optional List*

- Alteration of Computer Data or Programmes,
- Computer Espionage,
- Unauthorized Use of a Computer,
- Unauthorized Use of a Protected Computer Programme<sup>15</sup>.

*3.2.4. The 'Toronto Resolution'*

The Toronto Resolution (dated April 2, 1992), included in the Annex to our recommendations, is not specifically directed at the computer field. Its advantage is that it outlines a more general set of resolutions. It is the view of a group of academics who have developed a set of criteria to which codes might, in their view, conform. Its orientations provide a pattern which could create some kind of jurisprudence in Science and Technology development. The 'Toronto Group' is still at work, gathering codes for analysis<sup>16</sup>.

*3.2.5. Where Are the Ethical Problems?*

Some authors try to explore the main fields in which, in their opinion, ethical problems are raised. They mention<sup>17</sup>:

- Humans, their integrity, their privacy, their dignity, their happiness,
- Humans as workers, producers, creators,
- Computerization and cultural identities of civilizations and people,
- Computerization and ecology/the environment.

*3.2.6. Central Issues*

Finally, let us mention what IFIP-WG9.1 (Computers and Work), in its Havana Workshop on 'Ethics and System Design' (February, 1994), highlights as 'central issues'<sup>18</sup>:

- Exploring the relationships between what is public and what is private,
- Collective ethics,
- Users as moral agents,

- Global versus local needs and strategies,
- Cases and scenarios,
- Artificial epistemic niches and the politics of technical practice,
- Role of designers,
- Agents of change.

### *3.2.7. Broader Scope Issues*

When speaking of computer ethical issues, one cannot avoid to mention some broader scope issues which are real questions of today and are most often examined in the literature on 'Computers and Society'. As computing and telecommunication have become a constituent part of our collective life, no one can deny their influence on the way action in and on the world is affected by them, although the way to approach them is not easy. Those issues are mentioned and explained in the Final Remarks:

- the unequal distribution of information ('information rich/poor', the 'haves' and 'have-nots'),
- the unequal access to the technical means, including networks,
- the participation in decisions which affect our lives at home and work,
- the way computer technology reinforces predominant power,
- the quasi-total lack of control on the networks,
- the denial or restriction of access to groups and individuals who do not have the resources to participate in an increasingly market dominated system,
- the poor cultural diversity which today pervades the information, media and communication systems,
- the necessity of majoring local cultural content requirements in networks' offering, of promoting culturally sensitive and multi-cultural interfaces and involving cultural minorities in the design of socially significant information and communication systems.

### *3.3. Procedures to Be Examined*

IFIP is suggesting that any national society considering writing or updating a code examines carefully the procedures used to develop codes<sup>19</sup>. Questions must be raised, such as<sup>20</sup>:

- What are the procedures used to set up a code?
- What kind of monitoring and sanctions are accompanying the codes?
- Is a code an appropriate way for a national professional computing body which currently has no code to deal with 'inappropriate' professional practices (always bearing in mind that there should be no implied pressure that such a body should adopt a code).

Under these conditions, the national societies should be aware of such issues as:

- Which societies have codes? Which societies are 'chartered'? What is the status of the computer society?
- What does it mean to be a member of one of the national societies? Who can become a member, how, what duties are involved, and so on?
- What procedures are necessary to become a member?
- Who is excluded, when, and how?

The question of enforcement seems to be rather important and delicate, since, as shown in the analysis of existing codes, it varies from computer society to computer society. The degree of enforcement is sometimes very weak<sup>21</sup>.

#### 4. CREATING 'SPACES FOR DISCUSSION'

One of the main tasks for IFIP will be to create spaces for discussions, as suggested in the part of this book devoted to the analysis of the codes. This could be done through actions such as:

- submitting, through the IFIP Newsletter for instance, specific case studies, encouraging members to submit their own responses<sup>22</sup>;
- making available all the up-to-date codes of IFIP national societies, with related pointers to existing documentation for further research;
- publishing, as foreseen in the European Directive (under preparation), 'the codes which have been the subject of a favourable opinion ...'<sup>23</sup>;
- providing some Forum - under the Chairmanship of the IFIP President - where discussion could be raised about harmonizing codes of societies, in order to prevent restrictions in one country being prejudicial to another<sup>24</sup>;
- participating in international fora where similar questions are treated;
- assisting in the resolution of conflicts which could arise between national codes that are completely different;
- etc.

Therefore, IFIP will collect, compare and help disseminate knowledge on developments in the national societies. In the case of controversies, it will also advise on the resolution of problems in projects with professionals from countries which have very different codes.

#### 5. CONCLUSION

The work undertaken by the IFIP Ethics Task Group, established at the Toledo General Assembly, has been experienced as a stimulating, creative and collaborative task by its members. Its report will act as an analytical framework and foundation for the work IFIP considers important in developing its role in the field of computing and ethics.

Its specific mandate is now completed, but the task it undertook must be continued. IFIP's role will be to promote spaces for discussion.

IFIP hopes that its national societies will issue codes or guidelines along the lines suggested here, including a careful and flexible attitude to changing technologies.

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<sup>1</sup> A first draft of the recommendations was presented by the IFIP Ethics Task Group to IFIP Technical Assembly (Brussels Meeting, February-March, 1994), and subsequently sent to IFIP General Assembly email network for comments and feedback. These preliminary recommendations included the results of the study presented here as well as the recommendations of knowledgeable bodies. The recommendations included in this book take into account both those comments and the formal recommendations made by the Egyptian Computer Society, IFIP-WG2.4 and the Havana IFIP-WG9.1 Workshop.

<sup>2</sup> The Egyptian Computer Society suggests five functions of ethical norms (see in this book):

- a) to define responsibility imperatives,
- b) to act as a flexible instrument for supplementing legal measures,
- c) to awaken the awareness of people,
- d) to harmonize the status of the profession,
- e) to harmonize differences between different countries.

Another proposal was made to distinguish among three 'levels of abstraction' in guidelines (individual ethics of informatics, ethics of organization, and ethics of interactions). The first level 'affects everybody or

every organization related with informatics issues at an individual scale' (see contribution of Prof. LEON, member of IFIP-WG2.4, in this book). It could correspond to what we call here 'code of ethics', whereas the second would fit better within the context of a 'code of conduct'. The third establishes relationships between the first and second levels. Prof. Leon suggests treating specific questions in 'by-laws'.

- <sup>3</sup> Herbert MAISL, Conseil de l'Europe, Protection des données personnelles et déontologie, in: *Journal de Réflexion sur l'Informatique*, no. 31, Namur (Belgium), Août 1994.
- <sup>4</sup> For each main field and subfield, we indicate in square brackets the number of the codes which are concerned.
- <sup>5</sup> A parallel can be established between these topics and the suggested guidelines as recommended by the Egyptian Computer Society (see in this book):
  - 'a) *General Moral Imperatives*:  
Active contribution to society - Honesty - Fairness - Honor of credit, property, privacy and confidentiality.
  - b) *Professional Responsibilities*:  
Quality and Competence - Supplementing and abiding by laws - Providing honest opinions, reviews and consultations - Honor contracts.
  - c) *Awareness Responsibilities*:  
Provide active awareness and improve understanding of the public.
  - d) *Leadership Responsibilities*:  
Encouragement of acceptance of responsibilities - Improve personnel quality - authorized and legal use of resources - dignified environment for both users and personnel - creation of opportunities for personnel.
  - e) *Harmonizing Differences*:  
Removal of differences between different norms in the profession.
  - f) *Compliance to Code*:  
Consequences of non compliance to code - Procedure for conflict with code.'
- <sup>6</sup> Prof. LEON also insists upon 'privacy of information' and 'intellectual protection of products', but seems to consider them 'computer-specific ethical issues' (see 3.2.1).
- <sup>7</sup> Donn B. PARKER, Susan SWOPE, and Bruce N. BAKER, *Ethical Conflicts in Information and Computer Science, Technology and Business*. [Final Report (SRI Project 2609), SRI International, 1988]. Wellesley, Mass. : QED Information Sciences, 1990, 214 p.
- <sup>8</sup> See, for instance, FORESTER, Tom and MORRISON, Perry, *Computer Ethics: Cautionary Tales and Ethical Dilemmas in Computing*, The MIT Press, <sup>2</sup>1993, and JOHNSON, Deborah G., *Computer Ethics*, Englewood Cliffs, N. J. : Prentice-Hall, Inc., <sup>2</sup>1994.
- <sup>9</sup> Marc ROTENBERG, Privacy and the National Information Infrastructure, in: *Educom Review*, Vol. 29, No. 2, March/April 1994, pp. 50-51. See also: 'Proposed Privacy Guidelines for the National Research and Education Network (NREN)' by Computer Professionals for Social Responsibility (CPSR) at the National Commission on Libraries and Information Science (NCLIS), Washington, DC - July 21, 1992. The Proposed Guidelines (for NII and NREN) are included in this book. One may also consult: Electronic Privacy Information Center, 'Privacy Guidelines for the National Information Infrastructure: A Review of the Proposed Principles of the Privacy Working Group', Washington, DC, 1994. This paper discusses the US Government's proposed guidelines for the NII.  
One may refer also to: U.S. Congress, Office of Technology Assessment, *Information Security and Privacy in Networks Environment*, OTA-TCT-606, Washington, D.C., U.S. Government Printing Office, September 1994, 252 p.
- <sup>10</sup> Yves POULLET, Basic Concepts of Data Protection and New Information Technology, Council of Europe, Paper presented at the Conference of the Council of Europe on the Problems Related to Legislation in the Field of Data Protection, Athens, November 18-20, 1987, Strasbourg, October 9, 1987, DP/Conf.(87)1.
- <sup>11</sup> The Council of Europe, Report of Herbert MAISL, Legal Problems Connected with the Ethics of Data Processing, Study for the Council of Europe (CJ-PD[79]8), Strasbourg, August 29, 1979. This paper refers among others to the work of Donn B. PARKER, *Ethical Conflicts in Computer Science and Technology*, Work carried out at the Stanford Research Institute (SRI), with the help of the National Science Foundation: 2 volumes, 1978.
- <sup>12</sup> The Council of Europe, Committee of experts on Data Protection, Secretariat Memorandum prepared by the Directorate of Legal Affairs, (CJ-PD[82]31), Strasbourg, January 1983.



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- <sup>13</sup> *ibid.*
- <sup>14</sup> The Council of Europe, Committee of experts on Data Protection, Report of the 8th Meeting, (CJ-PD[83]25), Strasbourg, October 1983.
- <sup>15</sup> Council of Europe, Final Activity Report, Computer-Related Crime, Strasbourg, 28 July 1989 [CDPC(89)9, Addendum II].
- <sup>16</sup> Links have been established with the Toronto Resolution Group. In its report, it refers to the work of the IFIP Ethics Task Group, and expects feedback from it.
- We should also mention contacts with the American Association for the Advancement of Science which has a project underway examining the technological, ethical and legal aspects of computer network use and abuse. It has collected several hundred codes -- most from professional scientific and engineering associations -- and is now updating and expanding its collection as well as learning more about how the societies enforce their codes and educate their members (and others). Further contacts with IFIP are desired.
- <sup>17</sup> Suggestions made by the French TC9 Representative, on behalf of the AFCET Ethics Group, Madrid, 1992.
- <sup>18</sup> We simply mention here the titles of IFIP-WG9.1's recommendations which are given in full in this book.
- <sup>19</sup> Suggestions made by IFIP-WG9.2. (See letter sent to all IFIP national Societies, Technical Committees and Working Groups, in December 1992).
- <sup>20</sup> Though they cannot be summarized here, many of these questions receive preliminary answers in the different contributions to this book. Moreover, we have not received information from all the IFIP national Societies which have a code.
- <sup>21</sup> Prof. LEON suggests that disciplinary rules should not be included in the codes themselves, but in by-laws. From this point of view, the situation of IFIP national societies which presently have codes is not homogeneous. Anywhere, the question must be treated, and even a short sentence in the code itself would seem reasonable.
- <sup>22</sup> See the example of Intercom's 'Ethics Case Response'. This suggestion for 'cases and scenarios' is also made by IFIP-WG9.1. The 'German Ethical Guidelines' state, in article 12: 'The GI will compile a generally accessible casebook on ethical conflicts, which will be annotated and regularly updated.'
- <sup>23</sup> Commission of the European Communities, Amended Proposal for a Council Directive on the Protection of Individuals with Regard to the Processing of Personal Data and on the Free Movement of Such Data, Brussels, October 15, 1992, COM(92) 422 final - SYN 287, art. 28.
- <sup>24</sup> Prof. LEON proposes the creation of an 'International Committee of Ethics' with the aim of diffusing IFIP points of view on important topics.

## **THE TORONTO RESOLUTION (TTR)<sup>25</sup>**

We present a methodology for assessing particular ethical codes which comprises the key elements that all codes of ethics in science and scholarship should include. By suggesting that codes adopt a common Preamble, and that they consider addressing common elements to their codes, we are expressing our hope that the community of scholars and scientists can agree to a common moral framework for the conduct of their investigations. Each discipline should develop a particular code in the light of these considerations, and existing codes should be examined for their adequacy, effectiveness and applicability.

### **I. PREAMBLE**

Living in a world in which all forms of life are interdependent, we recognize that human activity since the scientific revolution now threatens much of the life on our planet. This threat stems in part from reckless exploitation of the earth's resources and massive pollution of the biosphere by humankind, exacerbated by rampant militarism. To help solve these problems, scientists and scholars, and all those concerned with the welfare of life on earth, need to unite in a world-wide moral community, in which considerations of beneficence and justice at a global level are fundamental. We recognize that knowledge gives power; that power tends to corrupt and may be used for dangerous and destructive purposes; and that consequently scientists and scholars, who share the privilege of participating in the advancement of knowledge, many under the shelter of academic freedom and in the tradition of open publication, have a particular responsibility to society for the effects of their work. All should make a determined individual and collective effort to foresee the implications and possible consequences of their scholarly and scientific work, and avoid studies that are likely to harm the quality of life. We should recognize that knowledge also gives enlightenment and promises emancipation from disease, poverty and other social evils. As an alert and enlightened community of experts and concerned citizens, scientists and scholars should participate in the social process of directing their research and its applications to benign ends, while educating their students and the public concerning this, the proper role of scholarly and scientific knowledge.

### **II. ELEMENTS OF CODES OF ETHICS**

Considering the existence of numerous codes of ethics, most being specific to a single discipline and often to the scientists and scholars in only one country;

Considering the difficulty of expressing in a single code the concerns of scientists and scholars in various disciplines and in different countries;

Considering that war is obsolete, at best futile and at worst destructive beyond comprehension or tolerance, and that the present level of direct military research is unprecedented, with human, physical and financial resources being thus diverted away from the proper ends of science and scholarship:

1. a code should articulate as far as possible the underlying assumptions and guiding principles of a working ethic;
2. a code should indicate specific measures designed to ensure that signatories adhere to its principles;
3. a code should be sufficiently general to encompass scholarly work and basic, applied and technological research as well as the actions of practitioners engaged in the discipline or profession;
4. a code should oppose prejudice with respect to sex, religion, national or ethnic origin, age, sexual preference, colour, or physical or mental disability;
5. a code should take into account that, while in general it is difficult to anticipate all the consequences of research, scientists and scholars have a responsibility, individually and collectively, to try to foresee, and to keep themselves aware of, the developing applications of their work, and to choose or redirect it accordingly;
6. a code should recognize that actions designed narrowly to benefit humankind may in fact threaten the survival of all species, since the ecosystem is a seamless web;
7. a code should forbid research directed towards developing or using methods of torture, or other devices and techniques that threaten or violate individual or collective human rights;
8. a code should direct scholarly and scientific activity towards the peaceful resolution of conflict and universal disarmament; since all research has military potential, every scientist and scholar should seek to resolve the ethical problem that knowledge, which should enlighten and benefit humanity, may be used instead to harm the planet and its people in war and in preparation for war;
9. a code should encourage its adherents to comply with established procedures for the scientific and (where appropriate) ethical peer review of research studies conducted under its auspices and, where such procedures do not exist, a code should specify them;
10. a code should urge its adherents to make all basic research results universally available;
11. a code should urge its adherents to identify and report violations of its terms, and should correspondingly ensure their protection from retribution by their fellow scientists, professional and learned societies, and the judiciary for such exposure;
12. a code should be widely disseminated through the school and university curricula, to educate the rising generations, as well as practising scientists and scholars, about their emerging responsibilities.

### III. ENDORSEMENT BY PARTICIPANTS IN THE TORONTO WORKSHOP (APRIL 2, 1992)

Benatar, Solomon:	medical scientist, U. Capetown, South Africa
Bhatia, R.:	mathematician, Indian Statistical Institute, Delhi
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Davis, Chandler:	mathematician, U. Toronto
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Kushner, Eva:	comparative literature, President, Victoria U., U. Toronto
Lavery, James:	student, Centre for Bioethics, U. Toronto

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Prentice, James:	physicist, U. Toronto
Summers, Graig:	psychologist, Laurentian U., Sudbury
Trenn, Thadeus:	historian of science, U. Toronto
Timmerman, Peter:	philosopher, U. Toronto
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<sup>25</sup> The Toronto Resolution has also been published in several Journals. See, f.i., Eric FAWCETT, Working Group on Ethical Considerations in Science and Scholarship, in: *Accountability in Research*, Gordon and Breach Science Publishers S.A., 1993, Vol. 3, pp. 69-72.