PHILOSOPHICAL CHALLENGES OF COMPUTING ETHICS: UNESCO AND INFORMATION ETHICS

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Abstract

Ethics and information activities are related in a number of ways. This paper discusses the role of UNESCO regarding information ethics. The main commitment of UNESCO is "free flow of information and access to knowledge sources," and the organization has held various meetings and congresses to this purpose. Then the author's project on mental mapping is discussed. The main focus of the project is on the question how interpersonal understanding is possible, and how this question is related to the problem of how human beings make decision in moral dilemma situations. The paper ends with a discussion of what is novel about information ethics in the age of computers.

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Information activities relation to ethics

Ethics is a concept balancing benefits and risks of choices and decisions. Information ethics includes ethical issues in the collection, storage, dissemination and use of information (Manoj & Azariah, 2004). The underlying heritage of ethics can be seen in all cultures, religions, and in ancient writings from around the world (Macer, 1994). We, in fact, cannot trace the origin of bioethics back to their beginning, as the relationships between human beings within their society, with nature and God, were formed at an earlier stage then our history can tell us.

There are at least three ways to view ethics (Macer, 1998).

Descriptive ethics is the way people view life, their moral interactions and responsibilities with others in their life. Information we gather is used to describe many things, and there are many ethical issues related to gathering information and storing information.

Prescriptive ethics is to tell others what is ethically good or bad, or what principles are most important in making such decisions. It may also be to say something or someone has rights, and others have duties to them. It is related to policy making and law.

Interactive ethics is discussion and debate between people, groups within society, and communities, and clearly information ethics is central to shaping the types and forms of interactions that are possible.

I have been involved in all these three aspects, and I wish to share some of the dilemmas I face as an ethicist, as a

researcher, policy maker, and webmaster. Firstly, let me discuss some of the work of UNESCO in this field, as an organization which has attempted to encourage reflection on this.

UNESCO and information ethics

The occasion of this conference to develop a cyberethics network is very opportune and timely, as it is a specific issue that was raised when the UNESCO National Commissions of the 46 regional member countries of UNESCO met in Wellington in May 2004. The issues of information ethics are closely involved in two of the five sectors of UNESCO, the Social and Human Science Sector, which I represent, and the Communication and Information Sector. They both have been involved for some years in encouraging discussion in this area.

The commitment of UNESCO to free flow of information and access to knowledge sources is inspired by its Constitution, which states that "*the wide diffusion of culture, and the education of humanity for justice and liberty and peace are indispensable to the dignity of man and constitute a sacred duty which all the nations must fulfill in a spirit of mutual assistance and concern"*. This widespread concern for information flow is shared in the UN system, which often provides information earlier and more widely than national governments. Much of the work has looked at ethical problems of the so-called digital divide, which has been widely debated outside as well (e.g. Loader, 1998; Murelli, 2002; OECD; UNDP 2001).

The UNESCO World Commission on the Ethics of Science and Technology (COMEST) had a subcommittee issue a report in 2001 on "The Ethics of the Information Society", in which they looked at issues like individual freedom and social responsibility, social exclusion and human values in an information society. Inside the digital divide there are gaps between persons in our generation around the world, as well as gaps between generations. There are expanding differences between persons living in the digital world and those outside of it. There are still 1-2 billion people in the world who have not made a telephone call, let alone use a computer.

In the Rio de Janeiro Declaration on Ethics in Science and Technology, 4 December 2003, at the Third COMEST meeting, we see the recommendation from Ministers of Science that "attention be given to non-proprietary treatment of software, transmissions, and other digital technologies essential to ensuring the linguistic cultural diversity of countries with relatively low representation on the Internet as well as in the use of electronic databases. Thus, an information society should be used to expansion of knowledge of, and retention of, cultural diversity.

There is widespread support for increased use of computers among the have-nots, and the ministers also recommended "that our governments support the increase in use and production of software, seeking autonomy and cost reductions for the countries of the region; that national and regional research groups be established with the objective of studying alternatives for the production of low-cost personal computers, aimed at universalizing usage of such computers, as well as implementing projects for regional cooperation in this field."

UNESCO has organized three conferences on INFOethics, in 1997, 1998 and 2000.

The proceedings of these are available on-line. The UNESCO INFOethics Congresses, organized since 1997, enrich the international reflection on the importance of the ethical and societal aspects of an Information Society. The Congresses bring together experts from a wide range of technological, educational, scientific, cultural and social environments worldwide. (http://portal.unesco.org/ci/en/ev.phpURL_ID=1654&URL_DO=DO_TOPIC&URL_SECTION=201.html). UNESCO encourages international debate about the impact of globalisation upon access to information and the process of communication.

The "First International Congress on Ethical, Legal, and Societal Aspects of Digital Information" was held in 1997 in Monaco. The "Second International Congress on Ethical, Legal and Societal Challenges of Cyberspace" was organized from 1-3 October 1998, also in Monte-Carlo, Principality of Monaco. Experts in telecommunication, information, computer science, social sciences and philosophy discussed the areas of public domain and multilingualism in cyberspace, privacy, confidentiality and security in cyberspace, as well as in societies and globalization.

Article 19 of the 1948 Universal Declaration of Human Rights upholds the "freedom to hold opinions without interference." Thus the theme of adoption of legal instruments guaranteeing freedom of speech and information is important, while recognising the limits of this freedom, such as for protection of privacy. Promoting and preserving ethical aspects and principles while developing creative multilingual content and universal access to information and communication means is central for achieving an equitable presence in, and access to, cyberspace.

The Third "UNESCO Congress on Ethical, Legal and Societal Challenges of Cyberspace" was held in Paris in 2000. It discussed the concept of fair use and access issues. There was also discussion of copyright exemptions for developing countries, and IPRs. The issue of IPRs and knowledge is a broad one, and controversial whenever applied to science and technology, and economic development. The freedom of expression and privacy issues were also further explored.

UNESCO is also involved with the International Telecommunications Union in the world summit on information societies (Geneva, 10-12 December, 2003; and Tunisia, 16-18 November 16-18, 2005 http://www.smsitunis2005.org/). A number of resolutions were made, but the themes of the digital divide, knowledge, economy and others were discussed. The use of information technology to promote the Millennium Development Goals were repeated.

From these conferences the UNESCO Communication and Information sector advocates embracing coherent ethical guidelines in face of increasing globalisation. This raises issues for policy development on the definition and adoption of best practices and voluntary, self-regulatory, professional and ethical guidelines among media professionals, information producers, users and service providers with due respect to freedom of expression.

The General Conference of UNESCO, recognizing the importance of promoting multilingualism and equitable access to information and knowledge, especially in the public domain, and reiterating its conviction that UNESCO should have a leading role in encouraging access to

information for all, multilingualism and cultural diversity on the global information networks, adopted the Recommendation concerning the Promotion and Use of Multilingualism and Universal Access to Cyberspace at its 32nd session (30 September – 17 October 2003). Through this Recommendation, which proposes measures fostering universal access to digital resources and services, and facilitating the preservation of cultural and language diversity, UNESCO is encouraging its Member States to support equitable and affordable access to information and to promote the development of a multicultural information society. *"Policy Guidelines for the Development and Promotion of Governmental Public Domain Information"*, as well as the "Recommendation concerning the Promotion and Use of Multilingualism and Universal Access to Cyberspace" are available for download.

As a computing and philosophy conference, however, let us shift to consider some more diverse ethical issues.

Ethical challenges of mental mapping

I want to now share with you a research dilemma based on the behaviourome project (or mental mapping project), which I started in November 2002 (Macer, 2002ab). It is not so much a challenge regarding the use of technology, but rather a challenge regarding the growing knowledge of human nature and life itself. There are many opportunities offered by greater understanding of the human mind, but also many challenges to greater individual and cross-cultural understanding of human beings.

Sociology provides us challenges to nationalism. Comparisons of results obtained using opinion surveys in Asian and Pacific countries relating to bioethics dilemmas find similar diversity of ideas within different cultures. This raised the question of whether the extent of human ideas used when processing a moral dilemma is really finite or infinite.

In order to develop the most suitable method to map ideas, the mental mapping project was discussed in two international bioethics roundtable conferences in Tsukuba (Macer, 2004; TRT8 in February 2003 and TRT9 in February 2004). The project has now set up 9 methods groups. The objective of this approach is to develop parallel methods is to develop a comprehensive basic structure leading to ways to describe ideas behind behaviour. Some methods are looking at a set of data examples, and others are looking at prose.

One of the most interesting questions before a thinking being is whether we can comprehend the ideas and thoughts of other beings, and conversely whether they can also read our mind. In terms of evolution there could be survival benefit with the capacity to be able to fully understand the thinking of others, both direct competitive benefit and also for the spirit of altruistic cooperation. Although the human mind appears to be infinitely complex and the diversity of human kind and culture has been considered vast, in 1994 I made a hypothesis that the number of ideas that human beings have is finite (Macer, 1994), and in 2002, I called for a project to map the ideas of the human mind.

While we approach the end of the human genome project, we continue to investigate human genetic diversity through various means and by looking at the different sets of markers, such as the Haplotype Mapping Project. The human brain

mapping project is still a decade away from making a map of the neuronal connections (http://www.nimh.nih.gov/neuroinformatics/index.cfm). Once we achieve a human brain map we will still be left with the above question: How do we think? While these projects are of great scientific value in understanding who we are, I would argue that we have already the means to embark upon a human mental map, with the goal of describing the diversity of ideas a human being makes in any given situation or dilemma (Macer, 2002a). I call this the behaviourome or human mental map. Such a map is not of a physical structure but a map of ideas.

There are several uses of such a project to make a human mental map. These include:

> To understand ourselves, and whether the number of ideas is really finite.
>
> To compare mental maps and idea diversity between persons and species.
>
> To aid in policy making to make policy that respects the diversity of people in a culture, and globally. This would help develop bioethics for the people, by the people (Macer, 1994).

If we can make individual mental maps, this would offer persons assistance when making moral decisions. This would give them a chance to consider all their ideas, and to make a more considered moral choice. This would also be useful in the testing and implementation of better bioethics education.

An idea mapping project has to start with a working definition of what would be counted as an idea. We could define an idea as the mental conceptualization of something, including physical objects, an action or behaviour that was made or could be made in the future, or a past, present or future sensory experience. Figure 1 is an example of the interplay between the multiple ideas and the situation that is behind a single response to a dilemma. The mental mapping project would want to map all the ideas related to each possible choice of a possible response as well as the actual responses that were made in different cases. Is the number of ideas finite, uncountable or infinite? While ideas, actions, and subsequent responses vary between different situations, I believe the number of ideas and choices of response (Figure 1) are not infinite. Perhaps this is a good point for our philosophical debate, though please note the first focus of mental mapping is ideas relating to moral decision making. Which approach is most useful for mapping ideas? The sources of ideas include personal history, genetics, culture, family, and upbringing. These influences lead to the creation of the individual human mind. While the fact that there are numerous influences upon a person's ideas might suggest that the mind is infinite, when we examine these carefully, we can also see the similarity of some influences, both internal, like common life plans, and external, like global media or religious traditions.

If a human being is faced with a given dilemma and situation, such as, "do we want to kill a cow to eat a steak? ", we could see a finite number of possible options. If the question is put so bluntly, we could imagine one set of responses that would say that in order to survive we have to eat the steak. Many in modern society allocate the task of killing animals to specific groups of people, thus avoiding the unpleasant task of killing the cow. In fact, we have seen this trend in recent centuries so that it even led to classifications inside some societies of persons who did this, like

the burakumin of Japan. Another set of responses to killing the cow would consider what the future interests of the person in using the resources are, e.g. killing a cow provides a meal. If the cow is killed today there will be one less cow to kill tomorrow. This way of thinking could develop different ideas which are culture specific, such as, a community wide response to have a feast, or the development of butcher shops, supermarkets, larger home freezers, salted or pickled beef. Another set of responses could say that we do not kill the cow but we will eat carrots instead. The responses are formed after considering a variety of ideas, so one way that has been used to study mental processing is linking all the ideas behind a response.

The above example is a rather simple example of a moral choice, but similar methods may be applied when we face other moral dilemmas. The normal way of understanding ideas of other beings is through mental processing of our brain. We can imagine evolutionary advantages for a being to be able to understand what another being wanted to do. This ability for communication of ideas has been a field of study in animal behaviour. We are still left with the question, however, of measuring the range of the actual ideas themselves, not just the way they are expressed and the communication between individuals.

If we define an idea as above, namely the mental conceptualization of something, including physical objects, an action or sensory experience, then the number of objects in the universe of a living being is finite. Both the number of possible choices for action and the sensory states of animals are finite. In that sense we can expect to be able to count ideas. The initial methodology would be to separate classes of ideas, which I suggested (Macer, 2002ab) could be separated as follows:

Conceptualization of physical objects;

Psychological meanings of images

Associated with objects (like colours, intensity);

Memories;

Plans for both short and long term future (there could be division of plans between those intended in the current waking period and those intended for a future waking period);

Intention to modify behaviour of self;

Intention to modify behaviour of surrounding beings and the environment;

Processing of sensory states (like pain, pleasure, libido);

Inhibition of a response based on immediate evolutionary benefit (like cultural and religious inhibitions to what has been called selfish genes, e.g. memes (Dawkins, 1976));

Interactive conceptualization of ideas in a community based response.

Some ideas may not fit neatly into one of these groups, so either multiple listing in one of these groups or subdivision of these groups would be needed. It is also somewhat unclear how the 7^{th} group, senses, relates to ideas. This list could be extended, and Khroutski (2003) has suggested a tenth class of ideas is cosmic ones. However, the list serves to illustrate how we can attempt to categorize the types of ideas that one would have to measure if

we attempted to count ideas.

The scientific literature to date that is relevant to the question of the extent of human mental diversity comes from a variety of fields including psychology, sociology, ethics, and related behavioral subjects. The methodology used in disciplines of genetics, psychology, animal behaviour, sociology, history, public understanding of science, religious studies, to mention just a few, needs to be harvested to design an integrative approach to understand the extent of human ideas. While researchers in each field could make their own attempts to map ideas, an integrated approach would be useful, and I invite readers to join a global mental mapping project. The first task would be to reach consensus on how to group ideas and what methodologies would be useful.

The perceived complexity of the problem has been a barrier to a dedicated effort to understand the extent of human ideas. Studies on the genetic influence upon human behavior are still to reach the same degree of vigour that has been achieved for studies of complex physical disorders such as cancer, because of a neglect of scientific studies of human psychological disorders in the past century. As we have seen in the growing recognition of the importance in developing reliable scientific methods for study of common complex diseases, we can hope for the improvement of methodology to scientifically study the human mind. While we can learn many things from human behavior in pathological conditions, equal attention needs to be paid to the study of how the human mind normally works when faced with everyday moral dilemmas.

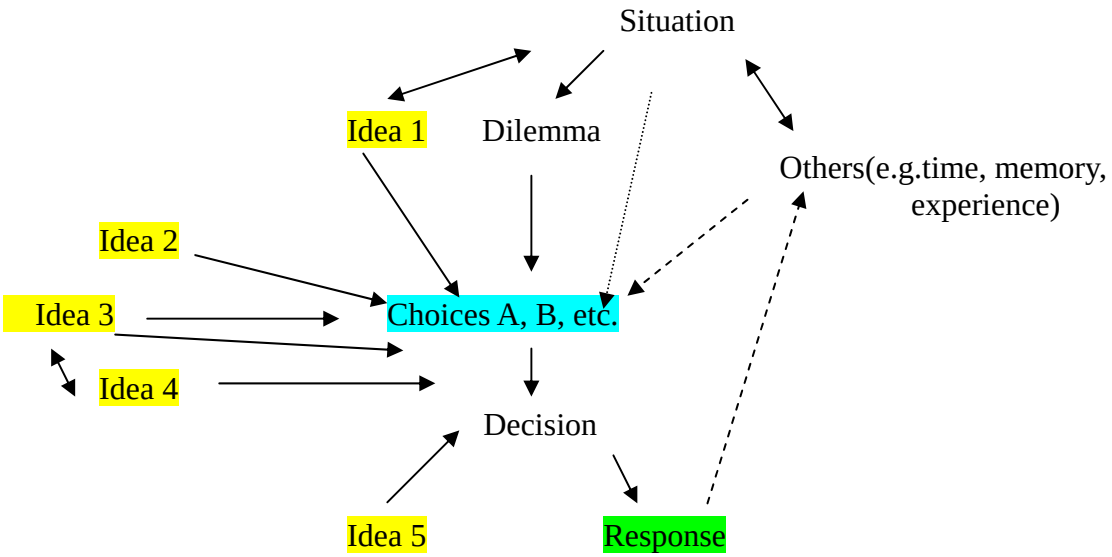

Figure 1: An example of the interplay between the multiple ideas and choices behind a single response to a dilemma

There are already useful models based on the work in the public understanding of science and technology choices that may be a catalyst for entering the whole field of human idea mapping. Discourse analysis methods have been developed for analyzing oral and written discourse (Potter and Wetherell, 1987). Studies have included surveys and interviews with both fixed and open questions, with many being conducted

on attitudes to science (Macer, 1992, 1994; Gaskell, et al. 1997). These studies led to separation of individuals based on their ideas as technophiles (loving technology), technophobes (fearful of technology) and doubters (not sure). This diversity of individual human response is found in all countries, even though the governments of countries may have opposing policies. At this societal level a government must decide a working policy to deal with issues that are controversial, even within small regional distances. For example, in the European Union, human embryo research is illegal in Germany, legal in Belgium, and encouraged in the UK. In international society, scientists who have developed research on embryos to help us understand human development and to provide better services for assisted reproduction are applauded with prizes.

Some cross-cultural studies suggest idea diversity is above boundaries of culture, religion, age or other demographic factors. In the 1993 International Bioethics survey with 6000 persons in 10 countries in the Asia Pacific area, the survey results revealed that when faced with a diverse range of bioethics dilemmas, the ideas that respondents in different countries like New Zealand, India, Thailand and Japan gave were similar and finite in number (Macer, 1994). For most dilemmas the number of ideas was about 30 for a given dilemma. The majorities of persons chose between groups of 5 to 10 ideas, and most were independent of culture, religion, age, gender, or education.

A mental mapping project would endeavor to analyze the ideas human beings have, and the factors behind these different ideas. One way to understand the ideas and mental processing is to ask a person about the moral dilemmas they remember that they used in practice in the past. In this way we can map the ideas that led to a particular action as a response to a situation. A second is to ask hypothetical questions about cases and explore how persons think. A third is to observe the actions and words of the persons. Practice and theory can differ widely, and ideas might vary even in the same situation based on past experience. Would a project to make a human mental map be better to focus on descriptions of people's memories when describing the actions that already happened, or would it be better to discuss the reasoning for hypothetical situations that could be standardized between people and communities? These may be necessary complementary approaches.

The individual human mind is a societal creation, formed through a series of interactions with other persons. After an initial response to a dilemma, real or hypothetical, our mind generates an idea. That idea is subject to genetic, environmental and cultural factors as discussed above. Then the process of idea development occurs, subject to the cultural restraints and lessons of the past to that person. The action is taken, but this is not the end of the idea for a normal human mind. The consequences are considered, there may be guilt or self-gratification, through the interplay of the conscience and ego.

The call for a mental mapping project can be pitched at both individual and social levels. Sociology has considered societies, and psychology has considered individuals, or influences upon individuals. We should develop a mental mapping project to explore similarities between cultures and communities not just at the individual human level, but also as members responding inside biological communities.

Cross-cultural studies can inform this process also. However, in the same way that the unit of evolution may be the individual, the unit of study of the human mind should describe individual diversity. No individual is an island separated by a vast ocean to their neighbor, and relationships with other beings would be one of the key issues in describing the human mind. However, we may have more success as a scientific study to focus on the ideas of individual humans, and their relations.

In modern society the media plays a significant role in formulating people's ideas, so media studies have traced the way that people's thinking in different countries is converging. When it comes to new controversies like the use of modern biotechnology, over the past decade the proportion of people who ascribed their attitudes to television has significantly increased to become the major source, ahead of newspapers, personal experience, and discussions with others (Macer and Ng, 2000).

There are implications for cultural identity. How should a culture that tries to maintain its cultural uniqueness by claiming everyone thinks the same, face up to the reality that in every culture the full range of idea diversity is found. This diversity is found in almost all groups, excluding those particularly finite groups that are formed to promote particular political aims, such as those who fight for or against abortion, or euthanasia. Religions which have observed already that humankind is universal will have less challenges than religions which claim a special religious status for their "chosen" people.

The question of the degree to which the human idea map is universe is of importance for the development of global society, when we are faced with dilemmas like should we have common guidelines to regulate the use of new biotechnology or assisted reproductive technology using cloning, for example. It is time to start thinking scientifically about it, whether or not science is finite or infinite. That is another question.

As discussed above, a mental map could be used to aid the decision making that people have to do when faced with a moral dilemma. Although some may say that ignorance is bliss, human beings spend a lot of time in guilt, thinking that they could have made a better decision. These memories are important for helping us face moral dilemmas in the future. I would envisage a general 3 or 4 dimensional model for ideas (Mental map) constructed as a total, and then onto this framework we can map our own ideas, and rank them. This might help us make more reasoned moral choices. It is unknown how much people would follow this, but it may provide a useful addition to bioethics. Perhaps people will just follow the principle of love of life (Macer, 1998), but then this is an idea of high priority.

To compare mental maps allows comparisons of idea diversity between persons and species. This will allow the development of descriptive bioethics into a common framework for comparative ethics. This will aid in policy making, to make policy that respects the diversity of people in a culture, and globally. This would help develop bioethics for the people, by the people. The development of biotechnology and use of humans in clinical trials in many countries raises fundamental questions about whether the standards used should be universal or local. The development of guidelines should be culturally sensitive in

the way ethical, social and legal aspects are considered. Having a map of human ideas will enable us to reflect more diversity of ideas into policy frameworks. We will have to pay attention to ensure it is used well, and not used to dictate majority views to minorities.

The mental map presented at TRT8 on the 15 February, 2003, was a 4 dimensional model including points which represent ideas on a matrix for all the types of ideas (9 colours (ideas) at present as in the first papers (Macer, 2002ab)) within a framework of six sides. The six sides are the ideals of self-love, love of others, loving good, loving life (Macer, 1998), with time - memories and hopes! I propose to add our heritage - memories and hopes to the four ideals in decision making! Memories include our biological, social and spiritual heritage seen in biology, medicine, society,and religion, for example. Note that this model does not necessarily exclude beings that cannot think, as they still share a memory (history) and a future heritage. As I showed in *Bioethics is Love of Life* (Macer, 1998), the four ideals are pre-human in origin, i.e. they are seen in other beings that appeared in evolution before human beings.

Through the course of TRT8 discussion, the mental map model, which was presented as shown in Figure 2 as a box with 1800 grid points sized 90cm x 90cm x 60cm, was unveiled (Akashi, 2003; Macer, 2003). There is no particular significance given to 1800, rather I expect that we will be working with a range of 10,000 ideas. The number of ideas depends on the arbitrary limits placed around the ideas. While a virtual map will be useful for communication, at present there is a physical model for the initial construction phases.

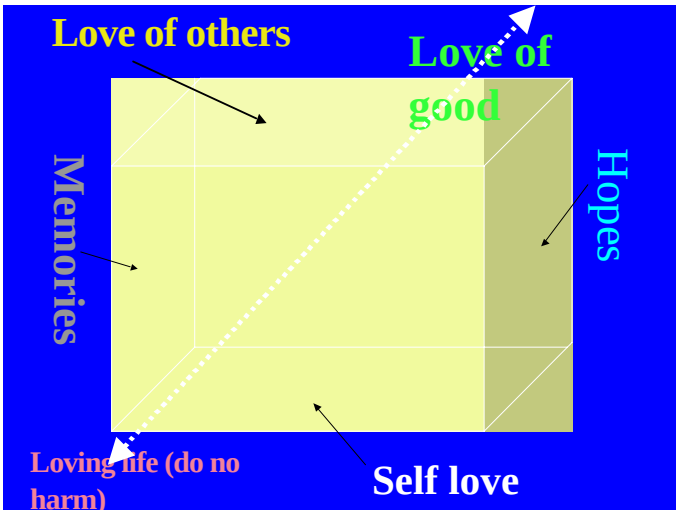

Figure 2: Pictorial representation of mental map 1

While a box was made with six sides, we could imagine more sides and a seven sided box is now used, and with multiple dimensions other principles can be included, shown in Figure 3. The seven sides are self-love, love of others, loving good, loving life, loving harm, memories and hopes.

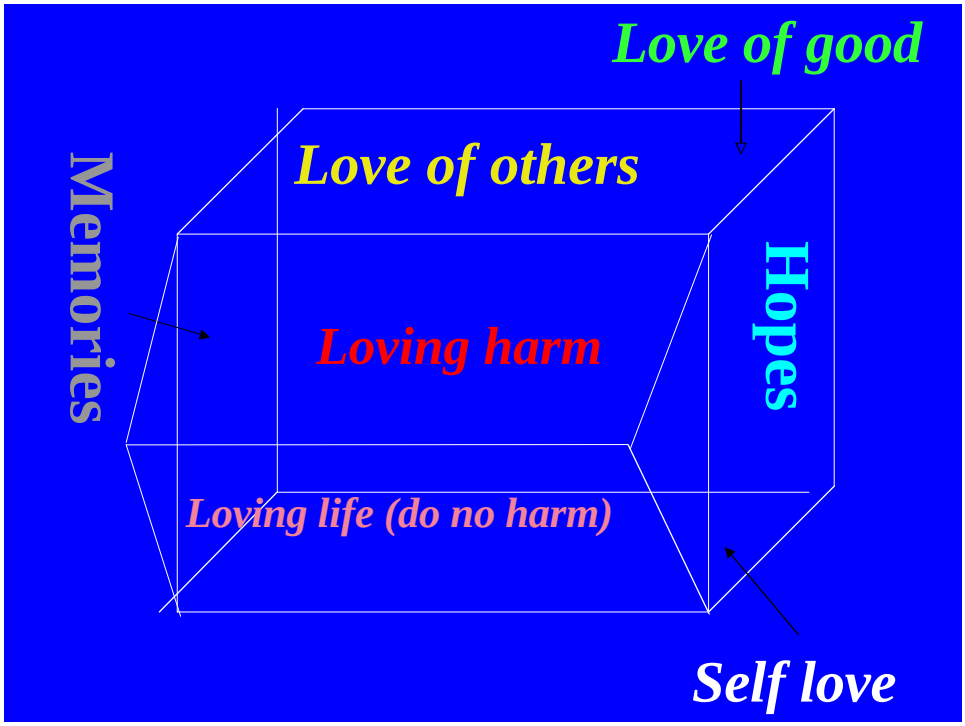

Figure 3: Pictorial representation of mental map 2

Examples where shown of how a process of decision making (Figure 1) included linking ideas together and processing them to make choices. The current mental map is built with the intention to study all the ideas used when facing moral dilemmas, but there are other areas of the human mind that include ideas which will be explored for integrating into a mental map.

One example of an idea that was given was the desire for food, which is a biological necessity. One of the points that were made in discussion was that it is difficult to say that we can understand the idea of another being. This concern is incorporated into the mental map by the concept that the idea points would have spheres of uncertainty around them.

The start of the second phase of the project was in June 2003 when the list serve (Yahoo Groups/Behaviourome) was set up, and about 100 persons have joined at the time of this talk. The project is open to all who wish to contribute in an open spirit of academic multidisciplinary understanding, and those who wish to join up in the list serve are welcome.

The next phase was to assign and volunteer for tasks in the building of a mental map, noting that various models can be pursued to find the best for each particular purpose of use of mental mapping. The methods groups include (but are not limited to):

METHOD 1: Matrix mapping of ideas relating to bioethics choices from biotechnology

METHOD 2: Introducing the elementary pragmatic model (EPM) in the behaviourome

METHOD 3: Ideas counter and software testing

METHOD 4: Testing of the ten ethical laws of robotics in a cross-cultural matrix

METHOD 5: Evolution of thinking and ideas

METHOD 6: Can any physical model map human insight and creativity, or is there something metaphysical about the mind?

METHOD 7: Integrative mapping of all ideas and integrative ethical decision-making and behaviour

METHOD 8: One page management system instead of prose mode

METHOD 9: Universal functional reductionism in integrative mental mapping: the tenth class of cosmist creative ideas

A home page for the mental map project has been established which includes a range of links<http://www.biol.tsukuba.ac.jp/~macer/menmap.htm>. Updates will be placed on this homepage, together with a list of persons joining this project, and further updates will appear in future issues of *EJAIB*. There has been publication of a number of papers on the project (Macer, 2004). These reveal that we do already have the means to embark upon a human mental map with the goal of describing the diversity of ideas a human being makes in any given situation or dilemma. This is the behaviourome or human mental map. This is not a map of a physical structure but a map of ideas.

In conclusion, we can see that the mental mapping project will develop international bioethics, social and human sciences of the twentieth century onto a more concrete and transdisciplinary basis in this century. We need to develop a common language for studies of life and ideas, and it is hoped that these projects will allow this. There will be challenges regarding many aspects of our understanding of human beings, though we should be clear, there will always be more questions than answers for humans to attempt to understand ourselves and nature. This is clearly an issue of information ethics in both collection, storage and use. Already military uses have been debated at conferences on this project, as well as many psychological consequences of the mental maps when they are available for human individuals and cultures, and in general.

What is novel about information ethics in the age of computers?

While we can recognize that many more people across the world have potential access to greater information in the computer age compared to before, we cannot just assume so. The ancient library at Alexandria in Egypt, 400BC no doubt had more books available than any of the readers could have coped with in their lifetime. Thus, a person faced with the information available on the Internet may not actually be able to intake more than someone avidly reading in an old-fashioned library.

In Geneva, on 12 December 2003 at The World Summit on the Information Society Yoshio Utsumi, Secretary-General of the International Telecommunication Union, cautioned that:

“Telephones will not feed the poor, and computers will not replace textbooks. But ICTs can be used effectively as part of the toolbox for addressing global problems. ... The challenges raised — in areas like Internet governance, access, investment,

security, the development of applications, intellectual property rights and privacy — require a new commitment to work together if we are to realize the benefits of the information society". (To access the WSIS Declaration and the Plan of Action go to: http://www.itu.int/wsis/documents/listing-all-en-s|1.asp)

Sadly, I have noted that few students today make the time to read through hundreds of traditional books. In fact, they have come to rely on short snippets of information in cyperspace. Thus, there may even be a decline in the information content. There are also of course concerns about the trustworthiness of information, as many non-peer reviewed sources of information are available on the Internet. Censorship and quality control are not novel issues, as we can always find trash publications. However, it is very cheap to put trash on the Internet. Perhaps it is better for the environment, therefore, if it stays only in cyperspace.

Ethics involves relationship between persons, and communication is a tool to this. There may be few new ethical issues here, except that people can retain the digital memory of what they and others said, or looked like, in the past. Thus, the scope of privacy protection can be expanded. There is a struggle for dominance in information technology as for any other field linked to economic and/or political power (e.g. Fraser, 2000; Garson, 2000; Hamelink 2000). There are also hackers (Himanen, 2001) who often, I am afraid to say, seem to be just modern forms of criminal activity.

The most challenging area is that of construction of artificial intelligence. Although I am a biocentric philosopher, I also argue that once a being can love others, and is able to balance principles to make moral decisions, it is a moral agent, no matter what it is made of (Macer, 1998). Therefore, if we create artificial intelligence, or so-called "artificial" moral agent, we have responsibilities to treat he/she/them with respect. This theme has been the subject of numerous movies and books, ranging from "2001 Space Odyssey", "Terminator", through "Matrix" to "I Robot". Our cyberethics network should be open to all moral agents, and one day might even take on a life of its own! The machines may even become spiritual one day (Kurzwell, 2001).

The word "ethics" is closely related to love. Love is the desire to do good and the need to avoid doing harm. It includes love of others as oneself, the respecting of autonomy. It also includes the idea of justice, loving others and sharing what we have - distributive justice. We can hope that information technology might be used for sustainable development (Mansell and When, 1998). While many have claimed that new technology requires new ethics, when we analyze moral dilemmas we see that people use many familiar principles of ethics, and ideas, to attempt to deal with moral dilemmas of advanced medicine. While the use or abuse of computing technology seems to be the major ethical question in our world today, and thus not something unique, once the computers become the users who can chose to use or abuse their ability they become almost as scary as human beings!

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