1. Introduction
In our post-modern world there is a growing uncertainty on what would be the right solution of concrete real-life moral problems. The importance of ethics is experienced every day by persons regarding their own personal moral problems as well as for decision-makers in organizations. There is a growing awareness of the serious consequences of moral problems. Every kind of organizational operation has an impact on other people’s interests, values and emotions. In today’s increasingly delegated and goal-directed organizations, employees more frequently have to make decisions in situations of ethical conflict, which increases the levels of uncertainty and stress. Ethical decisions have to be explained and justified not only before the public and mass media but also in private life to family and friends. The moral stress gives rise to poorer productivity and bad health. Ethical problems that have been poorly handled lead to serious consequences for persons and to huge costs for organizations.

Ethical competence is thus a most essential skill. It is necessary that decision-makers receive adequate help that makes them capable of dealing with different moral problems. Generally applicable principles constitute the foundation of the moral orientation and are necessary in all external and internal actions of an organization. In real situations decision-makers have to be able to apply these general principles and act according to them. However, in any actual case when a conflict or a problem of a moral character arises, it is seldom obvious what constitutes right or wrong. In these situations decision-makers need a cognitive ability, a tool, which has to function so well, that, when used, all aspects of a moral problem may be handled satisfactorily and the right solutions found in each and every concrete case. In that sense ethical competence is a capacity, a psychological skill, a way of dealing with ethical problems and conflicts. This implies reasoning processes that are not constrained by particular moral values or by the normative content of different solutions to moral problems.

Information technology has certain advantages that can contribute positively in moral problem solving and decision making. It is necessary, however, to adjust those computer tools to the psychological process of handling moral problems. Previous efforts to construct ethical support systems have focused on moral philosophy, certain principles, or normative values, leading to the presentation of solutions or to the identification of moral risks of different solutions. Such programs are not directly concerned with humans’ ethical decision processes and, therefore, run the risk of not giving optimal support to moral problem solving and decision making hindering the usability of the ethical program. In the present paper some ideas are presented and discussed on how computer systems can be constructed such as to adapt to the psychological factors which are critical for the emergence of ethical competence. This is an area of current interest and increasing importance. It is an interdisciplinary effort to combine the advantages of computer machines and the psychological processes of handling moral problems. It opens up for useful computer applications.
Information technology saves time and space, it has an enormous memory storage capacity, it can process and reorganize information fast and reliably, etc. Recent technical developments in particular, which give us the possibility to construct advanced games and simulate the complexity of reality in micro-worlds, may further broaden the spectrum of opportunities and possibilities for support in moral problem solving and decision making. It would be wonderful if we could use all these advantages. For that purpose we have to construct concrete and adapted information technology tools and use them in order to support and promote ethical competence. However, the confounding of moral values with psychological processes can create many problems and sometimes makes it impossible (Blasi, 1980; Haidt, 2001; Jackson, 1994; Jaffee & Hyde, 2000). The main hypothesis of this paper is that successful information technology tools are those that are adapted exclusively on psychological problem-solving and decision-making processes.

When we are planning to use information technology tools to support ethical decision making we usually run the risk of disregarding the psychological skill aspects of ethical competence. The classical approach focuses normally on informing about moral philosophy, presenting lists of principles and stakeholder interests, or simply producing moral solutions based on predefined normative values. Creating and using information technology tools based primarily on this classical approach certainly has its strengths, but it also has many weaknesses (Winograd, 1995; see also Friedman, 2005).

The conscious or unconscious hypothesis behind this approach is that value transmission is possible and applicable in real life, or that good philosophical knowledge and involvement of certain values and principles promote problem-solving abilities (usually in an unspecified way, i.e. no explanation is given about how this happens). Of course, an important issue is how this happens but, still more important, is if ethical decision-making is really supported at all.

2. The difficulty of handling moral problems
In psychological terms ethical competence is defined as a cognitive ability, described as autonomy. A person who is handling his/her moral problems autonomously is unconstrained by fixations, authorities and uncontrolled or automatic reasoning and reactions. He or she is able to start the thought process of considering and analyzing critically and systematically all relevant values in a moral problem situation. This may sound trivial since everybody would agree that this is exactly what one is expected to do in confronting a moral problem. However, this skill is not so easy to use in real situations. Psychological research has shown that plenty of time and certain conditions are demanded before people can acquire and use the ethical ability of autonomy (Piaget, 1932; Kohlberg, 1985; see also Schwartz, 2000).

When people face a moral problem they have great difficulties not confusing moral goals, values, feelings and emotions with the problem-solving and decision-making processes and the methods adopted for the solution of the problem. Usually, they do not clearly see the context of the problem nor do they analyze it in the same way they often do with
problems of nature. In psychological theory this is described as the moral phase of heteronomy, which in contrast to autonomy, means that the individual does not use functional problem-solving strategies, that is, critical thinking.

It is not easy to solve technical problems or problems of nature either. There is a huge amount of psychological research describing people’s deficient rationality (Eysenck & Keane, 2000). However, solving moral problems is even more difficult. For example, solutions to moral problems are much more controversial than solutions of technical problems (see for example Dahl, 1989). Persons or groups that are favored by a solution assert that this solution is good, whereas those who are not favored define the same solution as bad. Arguments for and against a certain moral solution can also be present inside the individual who thus faces a personal moral dilemma.

Furthermore, moral solutions may be antithetical to certain important values inherent within the same situation. Still, one may come to the conclusion that it is necessary to violate a principle which one upholds strongly, in order to preserve something more important. Double standards may also be morally necessary in certain situations. Such moral controversies heighten the complexity of the problem and make the problem-solving process much more difficult.

Strong emotions are always connected with real life moral problems. Obviously, the opposite is true with technical problems, and we know from psychological research that emotions and strong motivation make any problem-solving process harder (Glucksberg, 1962). Authority is also much more significant in moral problem-solving and decision-making. Obedience to authority hinders critical thinking, and its effect may be so strong that ordinary people can be convinced to do what they think is morally wrong, even to the extent of torturing and killing other people (Milgram, 1974).

Connected to moral problems is also a preference to concentrate on the content rather than on the process aspects of a moral solution. We are much more prone to agree or disagree with somebody presenting a moral statement, for example, that we have to be polite to each other, or that we have to beat our children. Instead of direct acceptance or rejection of such statements, which is what we usually do, we could ask how one came to this solution, what studies have been conducted, which methods were used, and which theories were involved; but we don’t. On the other hand, in the case of solutions to technical problems, asking such questions is not only exactly what we most often do, but also what we think we should do.

Autonomous and critical moral thinking is difficult, more difficult than autonomous technical thinking. In the searching to promote ethical competence we need to be assured that the autonomous ethical thinking is indeed stimulated by the support tools we use. Information technology should be seen in this light. This means that, if this technology has something particular characteristic that could give us some further help in bypassing all the above problems in our efforts to promote ethical competence, then it should be used.
Autonomy is a psychological function and it is supposed to be a necessary precondition for higher ethical competence. Autonomy is a way of thinking which focuses on the concrete moral problem situation. The autonomous person is unconstrained in identifying and considering all relevant values, feelings, duties, interests, etc involved in the situation, as well as all possible ways of action. Then, all alternatives can be compared systematically with all values and interests. Autonomy is in essence the opening of the opportunity to create a complete picture, a panorama, of the problem situation. This comprehensive and exhaustive analysis is the opposite of heteronomy, and such a process effectively prevents heteronomous thinking.

Heteronomy implies thinking that is locked and constrained on one or a few general moral principles, while overlooking other significant ones. Heteronomous persons make uncontrolled decisions and react automatically to a moral problem. Heteronomy is also characterized by responsibility avoidance. Responsibility is placed on a counterpart, on general conditions, on tradition, on authorities, etc. Persons locked in heteronomous thinking are not supposed to be able to analyze critically the moral problem situation, since they fix their thinking on the directives of a moral authority, or simply attempt to ignore the problem and avoid responsibility. On the other hand, autonomous persons have already taken the first step in the critical analysis process by highlighting the core of the moral problem; they have a clear perception of the conflict; free from heteronomous constraints, they can consider and confront systematically all possible actions for every value and interest involved in the problem.

From previous research we know that ethical autonomy is difficult to use. For different reasons, as mentioned above, it is not easy for decision makers to identify all relevant values and interests as well as all possible alternative ways of action in a moral problem situation. They have also great difficulty in systematically describing what impact every alternative action may have on each and every value and interest related to the problem (see for example Erlandsson & Kavathatzopoulos, 2005).

However, previous efforts have shown that it is possible to promote autonomy, and thus ethical competence (Kavathatzopoulos, 1993, 1994, 2004). The results are positive regarding the acquisition and use of ethical autonomy, both longitudinally and in real life. Nevertheless, using information and communication technology to support the acquisition and use of ethical autonomy may boost those positive results due to the special qualities and possibilities of this technology.

3. Computers as support tools for ethical skill
Indeed, there are several worthwhile suggestions of tools and methods, even computerized simulations, to support ethical problem solving and decision making. For example Paramedic [Collins & Miller, 1992] provides a detailed method to organize reasoning in coping with a moral problem and supports an extended analysis of many different aspects of the problem at hand. Value Sensitive Design (VSD) [Friedman, Kahn and Borning, in press] is another method to be used in the identification process of stakeholders and stakeholder values. Computerized methods such as Janus [Sheratt,
2003] provide access to various cases and support searching. Project Planning Software [Gotterbarn & Rogerson, 2002] performs deep and systematic risk analyses of moral problems connected to predefined moral principles.

However, according to the previous discussion and according to psychological ethical theory, the most important demand on ethical analysis tools should be their support of autonomous thinking. All the above tools and methods are excellent in systematizing and organizing ethical reasoning and handling real moral problems so they certainly can stimulate autonomy. But they do not focus exclusively on the basis of ethical competence, i.e., the conflict between heteronomy and autonomy. Since all of them, in a lesser or higher degree, extent the analyses to moral philosophical considerations, treat many different details and search for answers, there is always a risk of being too complex and of missing the main goal, namely blocking heteronomous thinking.

The acquisition and use of ethical autonomy in coping with moral problems by the use of information technological tools can indeed be facilitated. Information technology has special qualities and provides many possibilities to stimulate autonomy and heighten ethical competence:

1. The use of real life simulations by decision makers may help them to learn easier how to handle morally complex and controversial situations satisfactorily. One way to do this is by connecting the progress of the simulation to the concrete way users treat moral problems rather than to general normative aspects of given solutions. For example, this can be done by incorporating in the simulation the interests, values, feelings, etc, of stakeholders whose reaction may influence the development of the simulation process. However, this has to be done independently of moral philosophical theory, and it has to be based solely on the relevance any value to the problem at hand.

2. Information technology tools have great advantages according to the hypothesis of autonomy. Their memory storage capacity is enormous. Just by using them as a data base or an expert system in the effort to solve a concrete moral problem, the user can get information about certain values and interests, as well as about alternative ways of action, that otherwise might be overlooked. Reminiscence of the diversity, variety and complexity of the actual moral problem could effectively block decision makers’ natural tendency toward heteronomy, and stimulate autonomy (for example Janus and VSD).

3. Information technology is excellent in doing systematic work, much better than humans (for example Paramedic and Project Planning Software). Autonomy implies an effort to cover systematically all relevant values and alternative actions. This work could be further facilitated by the use of the capacity of information technology. A user can more easily be made aware of missing aspects or realize the need for combinations or separations of certain values and actions, if the existing information is combined quickly and systematically.
4. All information gathered during this process has also to be analyzed. The impact of every alternative action on all values and interests has to be described and placed on the matrix of all these relationships. This constitutes the base for rational and independent decision making. It is obvious that information technology has qualities that can facilitate and secure this process.

5. Information technology tools can also be used in real life for the solution of professional ethics problems. The memory capacity of information technology can be used to store information that can be retrieved and used in new and similar situations for the purpose of covering all aspects and for making a systematic analysis according to the hypothesis of autonomy.

References


