

Editorial

The rapid evolution of science and technology is fascinating, constantly challenging our imagination and our expectations, but requiring, at the same time, an effort to understand its ethical implications. Science and technology can give rise to fears and risks; regarding technological risks related to the environment and human and animal health, not only scientific and technological uncertainties emerge, but also socioeconomic and ethical concerns [1].

It would be difficult to draw a distinction between ethics of science and scientific ethics, the first does not exclude the second; scientific ethics indisputably falls within the ambit of ethics of science. Due to the own development of science and technology, today more than ever before, the ethical approach to science, the basis to humanistic dimension of scientific activity, and the identification of moral values within the scientific community are required. The basis of morality is still the main topic of ethics, the need to assess the ethics applied in various spheres of social life [2].

During the 60s and 70s of the twentieth century, due to the situation that prevailed at the time, in countries with Western tradition what eventually came to be called "applied ethics" was materialized. The three turns (linguistic, hermeneutic and pragmatic) provided by last century's philosophy were met by a fourth one, the applied turn and, in this case, to the areas of moral philosophy [3].

Fostered by an imperative of social reality that needed multidisciplinary responses, Applied ethics were born as a response in morally pluralistic societies. The answers to this social reality emerged from two main bodies, primarily from individual governments, first from United States, later in Europe and then elsewhere; ethics committees of various types (local and national) were formed, to struggle against biomedical issues, problems posed by the development of technologies, issues related to good corporate governance, the actions of the media, etc. A second instance are experts from different social spheres; because they, on the one hand, faced problems for which there were no automatic solutions and wanted a development of their profession with dignity and transparency. Taking into account the instances at the time claimed by the emergence of these applied ethics, we can say that they are the same that nowadays, defend and demand an ethical science in the world.

Grounded with values, principles and virtues, the excellence of the activity was built, not just by observing the law. The formation of applied ethics constituted an irrevocable way of knowing and acting, precisely because they were not the product of a single instance, but appeared as a demand from citizens, politicians, experts and ethical professionals; Nevertheless, it is important to notice that being born from demands of social reality they comprise not only philosophical disciplines, but other parts of this reality, joining it in different ways.

The Spanish philosopher Cortina identifies four characteristics of applied ethics [4]:

1. Language and philosophical reflection applied to everyday problems.
2. Principles and scope based on social demanding and a civic ethic.
3. Experts, not only philosophers, engaged in the study.
4. The convergence of different fields in their study, not only a single ethics theory, including interdisciplinary approaches

The current development of science and technology outweighs, physically and conceptually, the world and the natural order. Despite the concentration of programs for the preservation of natural and cultural heritage, in the late twentieth century, perhaps it is most needed, placing as a central program, one comprising ethics literacy and the preservation of the most important heritage of civilization, the human, seen as a biopsychosocial unit. Problems such as the responsibility of management of scientific research, the ethical neutrality of science, negative consequences of contemporary scientific and technological development, lack of respect for intellectual property and the use of information and automation, the atomic bomb, germ warfare, intercontinental missiles, organ transplants and genetic manipulation, ethical issues around human cloning, suggest the extent to which man will reach scientific development without jeopardizing the existence of man himself and his life in society.

Conversely, among other accusations made to the current science, there is a particularly popular one that might be called "lack of ethics" or "the ethics of unconsciousness, not only pointing out warlike uses of some scientific developments, but also considering as threatening the savage destruction of the environment, lakes and rivers transformed into ecological graves, the disappearance of many animal species and urban pollution." This tragedy - they say - is the result of the exploitation of nature through technology developed by scientists". But, if researchers are not congenitally evil, then is science responsible for such evil? Science is a tool, it is the way man explores the nature and get knowledge about it. Applications that are given to this knowledge do not depend on the method used to achieve it, nor to their content. No matter how hard we try, we, human beings, are the only responsible for what we do. If we are to use controlled nuclear fission to cheap energy sources or to make atomic bombs, the process does not depend on nuclear fission; if we are to use microbiology to better understand and cure our sick people more efficiently, or if we are to use it for germ warfare, the procedures do not depend on science or scientists. Each of us, as human beings, are responsible. The ethics of science is no different from the ethics of political or journalist. No one is guiltier or more innocent than the other, because their ethics does not depend on the professional activity but their participation in the life of society as the other human beings [5].

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References

- [1] United Nations Educational, Scientific and Cultural Organization (UNESCO), *Ética de la Ciencia y la Tecnología*. [Online]. Available: http://www.unesco.org/bpi/pdf/memobpi44_ethics_es.pdf. Accessed on: Feb. 4, 2016.
- [2] L. López, "Por una ética de la ciencia y la tecnología: ideas y perspectivas", in *El saber ético de ayer a hoy Tomo I*, L. López (ed). Havana, Cuba: Editorial Félix Varela, 2004, pp. 85-144.
- [3] A. Cortina, "Ética pública de los derechos a las responsabilidades", in *Economía ética y bienestar social*, E. Fontela and J. Guzmán (eds). Madrid, Spain: Pirámide, 2003, pp. 95-107.
- [4] A. Cortina, "La dimensión pública de las éticas aplicadas", *Revista Ibero-Americana de Educación*, vol. 10, no. 29, pp. 35-42, 2002.
- [5] R. Pérez, "La ética del científico", in *Acerca de Minerva*. [Online]. Available: http://bibliotecadigital.ilce.edu.mx/sites/ciencia/volumen1/ciencia2/40/htm/sec_42.html. Accessed on: Feb. 10, 2016.