
GEOETHICS – URGENTLY NEEDED!

by Lopo Vasconcelos

Ladies and Gentlemen,

It is an honor for me to have the responsibility of giving the final talk of this event. Again, I would like to thank the organization, especially John Hancox and Ricky Pinheiro, for having invited me to be present here and to address a very important topic of now-a-days activity of a Geoscientist or, better said, of a Geo-professional – Geoethics.

But before all, let me explain that I am not an expert on the matter, just an interested person. I came in contact with Geoethics last year, during the 34 IGC in Brisbane, when I met the present president of the International Association for Geoethics – IAGETH – Prof. Jesús Martínez-Frías, who invited me to participate in a session dedicated to the topic. I found it very interesting and absolutely necessary for our activity as Geo-professionals, especially in a world where development is mainly driven by money, and tending to put aside other values important for the sound survival of societies, such as moral and ethics. In between I became vice-president of IAGETH for Africa and have since then trying to spread the news throughout our continent, and also taking profit of being a member of the Council of the Geological Society of Africa.

I am from an African country that suddenly discovered several mineral resources, mainly coal, gas and heavy sands, amongst others, meaning that these resources are already playing a major role in our economy, and we must make sure that measures are taken to avoid these resources to become a curse, as it already happens in many countries of our continent, instead of becoming a benefit for the people. And for that, these measures must take into account ethical issues.

I have been giving myself some thoughts about ethical issues in our field of activity, and naturally I am more biased to the Mozambican situation, but I guess that in one way or the other, the problems are more or less common to our countries. And as Academics we have

the duty and the responsibility of expressing our opinions. Last November, during our 1st National Congress of Geology, I delivered a talk about geoethics (Vasconcelos, 2012), and being a beginner on the issue, I do not resist using some of the material presented then.

Let us see how IAGETH defines Geoethics:

Quote: Geoethics is an interdisciplinary field between Geosciences and Ethics which involves Earth and Planetary Sciences as well as Applied Ethics. It deals with the way of human thinking and acting in relation to the significance of the Earth as a system and as a model. Geoeducational, scientific, technological, methodological and social-cultural aspects are included (e.g. sustainability, development, geodiversity and geoheritage, prudent consumption of mineral resources, appropriate measures for predictability and mitigation of natural hazards, geoscience communication, museology, etc). In addition, the necessity of considering appropriate protocols, scientific integrity issues and a code of good practice – regarding the study of the abiotic world – is covered by this discipline (End of quote, IAGETH website).

Meaning this that there is a mixture between Geosciences and Ethics. I am sure that the majority of us here in the room are aware of the meaning of Geosciences. But are we all aware of what Ethics is? Geosciences deal with material things, therefore its understanding and comprehension is much easier than Ethics, which deals with moral, social, cultural and behavior concepts and issues. Ethics has a heavy subjective charge, which varies from culture to culture, from political system to political system and even from religion to religion. And in countries like Mozambique and South Africa, characterized by being multi-cultural, multi-racial, multi-“many things”, the ethical problems are more complicated and difficult to solve.

This said, what is Ethics? Many definitions can be found in the literature. For instance, a Portuguese Dictionary (Priberam 2012) defines Ethics as the part of philosophy dedicated to the study of moral values and ideal principles of human behavior; The Encyclopedia Britannica (TEB, 1911) says that “ethics” derives from the Greek *ἠθικός*, which means “belonging to character”. Frieser (2003) says that Ethics consists on the systematization, defense and recommendation of the good and bad behaviors. On its hand, the Collins

English Dictionary (in Mat3nez-Fr3as et al, 2011) gives three definitions for Ethics: (1) the philosophical study of moral values of human conduct, and the laws and principles that should govern it; (2) a code of behavior considered correct, especially of a particular group, profession or individual; and (3) the moral fairness of a decision. Many more definitions could be presented.

In our case, Professional Ethics is what matters more, and according to Chalk et al 1980 (in Mat3nez-Fr3as et al, 2011), Professional Ethics are the principles defining the rights and responsibilities of scientists in their relationships with the other scientists and with other people, including employers, researchers, clients, students, etc.

Velasquez et al (2010) refers to a survey carried out by Raymond Baumhart on the meaning of Ethics amongst business people. The answers can be framed in five groups:

(i) Ethics has to do with what my feelings tell me what is right or wrong:

However, being ethical doesn't really mean following one's own feelings; for instance, if I feel like doing something to someone in revenge, it would be anti-ethical;

(ii) Ethics has to do with my religious beliefs:

But, it is not necessary to be a believer or religious to be ethical. If that were the case, all non-believers could never have ethical attitudes, and this is not true;

(iii) Ethic means doing what law commands:

I think this is not correct. We had in the past, in our countries, political systems that were prejudicial to a great number of citizens. Need not to go into detail; in these cases, the law enforcement would be non-ethical for many people;

(iv) Ethics means the behavior standards accepted by our society:

If that were the case, an entire society could be anti-ethical (Velasquez et al, 2010). And here we have all to be careful. It is normal to hear stories of bribing the police and other officials to get things solved. It looks like it is becoming a habit. I presume all of us are against all these attitudes, but also people end up accepting and conniving in order to solve their problems. What is wrong becomes normal instead of abnormal, and those

willing to act properly are called idiots, ET's, etc. Meaning this that there is an inversion of values more or less institutionalized.

(v) I don't know what it means:

Probably many of us would respond like this. So! No further comments.

These answers show, on one hand, that there is no consensus on what Ethics means and, on the other, that there is a confusion of concepts: ethics, feelings, moral, law, society, etc. And whatever the definition proposed is, it has to do with the cultural, social, political and demographic environment where one is included. Again, as said above, this situation is of great acuity in our countries, given their great cultural, racial, tribal and religious diversity. What seems to be correct for some, for others could be wrong, and the management of these problems is not easy. There are, however, aspects that seem to be common to all situations, like not stealing, not killing, not raping, etc.

Above I referred to the Professional Ethics as the principles defining the rights and responsibilities of scientists in their relationships with the other scientists and with other people, including employers, researchers, clients, students, etc. (Chalk et al, 1980, in Martínez-Frías et al, 2011). It is widely accepted that one of the main ethical approaches to decision making is Deontology, which refers to doing what is correct, meaning that many decisions are correct independently of their consequences (Martínez-Frías et al, 2011). Example: the suspension of the air traffic in Europe due to the eruption of the Eyjafjallajokull (ei-ia-fia-tlo-kult) in 2010 in Iceland, despite the resulting serious economic consequences (US\$200 million a day, according to Nemeč, 2012).

Our duties as geo-professionals go deontologically beyond our knowledge and capacities. According to Stephenson (1997, in Martínez-Frías et al, 2011), each one of us must bear in mind that Ethics is part of his professional responsibility, meaning that our professional activity must consider not only our knowledge but also the way we use it and, most fundamental, we must be clearly aware up to where we can go or are able to solve a certain problem.

One of the differences between Ethics and Deontology is that Ethics refers to the personal awareness, and Deontology refers to a model of acting approved by a group (Union Professional, 2009; in González & Martínez-Frías, 2011), that should be designed in such a way that inspires, strengthens and supports the geo-professionals, but also acting against those behaving incorrectly (González & Martínez-Frías, 2011).

We are here all involved with Geology and Mining or, at least, with Geosciences in general: field geologists, office geologists (panning and decision making), consultants, teachers, etc., each one of us facing different problems, but with aspects common to all of us. And here I would like to mention the Spanish Deontological Code of the Geologists College (ICOG, 2011), the first to include a compromise with Geoethics. This document defines clearly the guide-lines of the geo-professional activity. And these should apply to all of us around the World:

Quote:

- *Geology is a profession requiring scientific and technical knowledge, experience and correct judgment, on the service of the public and private sectors;*
- *The Geologist has a professional responsibility towards his client and colleagues..., and should act on an ethical and clean way;*
- *His activity may have a great impact on the society, environment and territorial planning; therefore he is obliged to decide according to the interest of the public and client, and to everything related to safety, health protection, geoethics and sustainability;*
- *Geologist must act according to the principles of social responsibility, integrity and professional independence, personal dignity, truth, loyalty and diligence.*

End of quote.

These guide-lines define a certain number of responsibilities, of which I only refer to some of them:

1. *To accomplish with geoethical principles, the Geologist must act with scientific integrity, good practices and adequate protocols.....;*

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2. *The Geologist must be aware of the importance of the technical and scientific progress for Mankind, and of his social responsibilities in the exercise of his professional activities.....;*
 3. *The Geologist is required to ensure economic and social development that meets the needs of the present without compromising the ability of future generations, seeking to maintain a comprehensive and integral vision in the solution of problems affecting our planet.....;*
 4. *The Geologist must take into account the ethical needs to protect geodiversity and geoheritage*
 5. *The Geologist will put his knowledge and skills in the mitigation of natural disasters, giving priority to preventive strategies, and seeking to ensure the safety of persons and property, as well as protection of the environment.....;*
 6. *The Geologist will evaluate the role of geological factors in the struggle against poverty and, if appropriate, to contribute with his knowledge to the sustainable improvement of the living conditions of the most vulnerable societies.*

After this, I would like to encourage everyone here to do a reflection on how and whether their work reflects these principles and what each of us can do to make it happen.

I have been told that in this room, besides geo-professionals, there are people from other professions, who, for being here, are interested in Geosciences and Mining; therefore, they are also compromised with geoethics, besides the ethical aspects linked to their own activities. Nobody is exempt of ethical obligations.

The International Declaration of Geoethics, approved and adopted at Příbram, Czech Republic, in 2011 (González & Martínez-Frías, 2011; Nemeč, 2012) during the 2011 AGID scientific meeting, lists some indicators for further development of Geoethics (wording is not exactly the same as in the declaration):

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- a) To consider the importance of Geoethics in the context of facing extraordinary natural hazards and disasters as the ones occurred recently (as Aquila earthquake; Iceland volcano; Japan Tsunami, etc¹);
 - b) To include geoethical approaches in new legal aspects (including insurance policy), as well as to include its principles in ethical thinking;
 - c) To strengthen the links between geoethics and new aspects of geosciences education;
 - d) To recommend the inclusion of geoethical topics in deontological codes;
 - e) To strengthen the links with mining engineers and their activities (for the optimum use of mineral resources²);
 - f) To stress the need for searching new priorities to reach the Millennium Development Goals; and
 - g) To create links for incorporating geoethics into any activity related to the abiotic world.

It is clear from this list that there plenty to do in Geoethics and to implement Geoethics.

Concerning, for instance, the natural disasters (the first point of the declaration), all of us remember certainly the severe floods we had in Mozambique in 2000, 2001, 2007 and more recently in 2013. Against all the odds – poor country, lack of human and material resources – and because Mozambique has been suffering for ages from natural disasters, the rescue organization was always pretty good and the human fatalities reduced to a minimum. More could probably be done in order to mitigate effects if a straight cooperation with geo-professionals existed. These professional can, within certain limits, forecast the occurrence of many phenomena, not exactly when, but if occurring, where they will strike, what sort of damage they can provoke, and suggest measures to diminish their impacts.

This has also to do with geoeducation and geoethical approach (Nemeč, 2012), first in the schools, and then within the populations. Thus, school curricula should include matters related to geosciences and geoethics since the primary school. Not only geoethics, but ethics in general, since ethical values are crumbling down on a frightening way all over.

¹ Examples added by the author.

² Added by Nemeč, 2012.

Concerning the relationship between geoeducation and geoethics, Martínez-Frías & de Wever (2013), refer to an interesting statement by Bezzi (1999) that says: “*Geologists and earth science educators have the great responsibility to transform geoscience education into a process that must go beyond mere teaching and learning the facts, laws and theories; it must involve understanding the nature of geoscience and its relationships with society*”.

All this will contribute to the sustainability of societies (Nemeč, 2012). The concept of sustainable development was introduced during the Rio de Janeiro Summit in 1992, which defined it as “*satisfying the needs of the present generations without compromising the capacity of the future generations to satisfy their needs*”, and this concept is one of the main thriving ideas of the so called Earth Charter fostered around the United Nations (González & Martínez-Frías, 2011). Amongst other things, this Charter promotes a new sense of global governance and shared responsibility of all human beings, with the conviction that we are not masters of the planet, but that we are part of it (González & Martínez-Frías, 2011).

This raises the issue of the careful use and exploitation of a nation’s mineral resources for its sustainable development. We often read and listen of news about clashes between populations and authorities, due to abuses of these against those in order to speed up the investments from companies, be they national or foreign, without respect for their long ownership of the lands and cultural traditions, and even without respect for the law the authorities approved themselves. Probably, there are often exaggerations from the press. We know that bad news sell paper! But, as said in Portuguese, “there is no smoke without fire!” And things happen and are happening. And instead of going in the right way for the correct use of the resources, these could be a curse to the nation.

We are geo-professionals in several branches of activity: teaching, research, field geologists, consultants, and some of us have several activities, and I am sure that all of us face serious ethical problems on a day-to-day life.

As a teacher, I see with worries the gradual degradation of the level of knowledge of students entering the university, and especially in Geology. There is a lack of knowledge of basic scientific concepts, the absence of behavioral attitudes and a tremendous lack of general culture. And the university has the obligation of graduating the students in a certain

amount of time. Courses are structured considering a level of knowledge at the entry of the university. But we need to go far behind and use precious time to teach things supposedly already known. The question is: how to train these youngsters, in a 4 years period, with a good pack of knowledge not only as geologists, but also with a reasonable level of culture which will allow them to “be” in the society? Should I, as a teacher, follow the orientations of the institution to graduate the largest possible number of students and lighten the evaluation criteria? Or should I be too demanding and reprove a large number of students? I know that the answer is in between, but exactly where, I do not know!

During my activities as geologist, I came across some geological reports produced by geoscientists (Mozambican and expatriates) and some of them are a real attack to ethics and to the good name of the profession of geologist. Besides, there were cases in which my name was used in a report for which I didn’t participate, and which was not approved by the authorities. Both these cases are serious and denote a lack ethical attitude. I am sure that this would not have happened if Mozambique had a deontological/geoethical code or an association where professionals should register to be allowed to practice the profession. In both cases, the situations would be denounced and the practicing licenses removed.

Therefore, what is the role of professional organizations, such AGMM (Geological Mining Association of Mozambique) and GSSA (Geological Society of South Africa), in strengthening the role of geoethics in our societies? The role is complex. The adoption of deontological/geoethical codes which force, at least morally, all geo-professionals to act accordingly, would be a first step. Secondly, they must work together with the national educational systems to debate these issues and include them in the curricula.

When we look at the objectives of AGMM (2003) as defined in its statutes and by-laws, many of them go along with all these issues. I will refer only to the most relevant:

- a) Represent Geological sciences professionals before Public Authorities, giving its views on issues of its specialty whenever consulted by official and private entities or when it is opportune;
- b) Promote and maintain the prestige of the profession;

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- c) Collaborate and participate in the drafting of laws, regulations and other legal documents on which geological sciences have or may have a preponderant role;
 - d) Draft a professional deontology code, establish mechanisms and take measures, which ensure its fulfillment.
 - e) Encourage the highest standards of professional competence and ethical behavior in the practice of geosciences in the country;
 - f) Promote the technical and scientific development and teaching of geological sciences;
 - g) Support sustainable development of water, mineral and fossil fuel resources in the country and the application of geological sciences for the improvement of socio-economic conditions and the living conditions of the Mozambican population

I believe GSSA objectives play according to a similar tune.

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What are we doing in Mozambique concerning Geoethics and Deontology? At this very moment, the Geological Mining Association of Mozambique (AGMM in Portuguese) launched a committee to stimulate the discussions about a Deontological and Ethical code for Mozambican Geo-professionals. A proposal has been recently presented to the AGMM Board and discussions will happen soon, and we foresee its approval at the beginning of 2014.

At IAGETH level, being this a relatively new international organization, we are still strengthening ourselves, nevertheless trying to fix roots in all countries, by establishing National Chapters of IAGETH in all of them (38 up to now), and at African level, we have only 10 National Chapters: Mozambique, Zimbabwe, Nigeria, Ethiopia, Libya, Morocco, Egypt, Botswana, Namibia and Cape Verde. Obviously this is still beyond our wishes, but I am sure that, step by step, we will cover the entire Continent. And for this, the joint work with the Geological Society of Africa will help. In 26th April 2013, a memorandum of understanding has been signed between IAGETH and GSAf with the objective of bringing the two organizations together to raise the awareness in African geoscientists to the

importance of giving due attention to ethical aspects and issues during their professional activities (MoU, 2013).

I hereby invite South African colleagues to join the group, and GSSA to become an IAGETH partner organization. I believe that you, South Africans, with such a big tradition in Geosciences and Mining, would be an added value to our international organization, and for the strengthening of Geoethics in our Continent.

Most probably, many of the people here in the room think that these issues are a Utopia, and that what is intended is a dream. But dreams command our lives, and without dreams, life would be meaningless. A Portuguese poet, António Gedeão, composed a song entitled “The Philosophical Stone” where he says: “They do not know nor dream that dream commands life, and whenever a man dreams, the world jumps and moves!” Let us then dream and move our World forward.

I would like to conclude with a sentence from Greenpeace: When the last tree is cut, when the last river is polluted, when the last fish is caught, you will understand that money cannot be eaten!

And I add: Then it will be too late!

Thank you very much!

BIBLIOGRAFIA

- AGMM, 2003. **Estatutos da Associação Geológica Mineira de Moçambique** (Statutes of the Geological Mining Association of Mozambique).
- Frieser, J., 2003. **Ethics**. Internet Encyclopedia of Philosophy (A Peer-Reviewed Academic Resource). Last updated: May 10, 2009 | Originally published: June 29, 2003. <http://www.iep.utm.edu/ethics/> (acedida em 2012.09.10).
- González, J.L. & Martínez-Frías, J., 2011. **Geoética: un reto para la deontología profesional**. Tierra y Tecnología, no. 40: 10-14.
- IAGETH website. **Internacional Association of Geoethics**. <http://tierra.rediris.es/IAGETH/> (acedida em 2012.09.10). New web address: <http://www.icog.es/iageth>
- ICOG, 2011. **Código Deontológico. Ilustre Colegio Oficial de Geólogos (ICOG)**. Aprobado Por La Asamblea General Ordinaria del ICOG, Celebrada el 9 de Abril de 2011
- Martínez-Frías, J. & de Wever, P. (2013) **Teaching of Stratigraphy, geological heritage and Geoethics. State of the Art**. Ciências da Terra 18: 43-48.
- Martínez-Frías, J.; González, J.L. & Pérez, F.R., 2011. **Geoethics and Deontology: From fundamentals to applications in Planetary Protection**. *Episodes Vol. 34, no. 4:257-262*.
- MoU, 2013. **Memorandum of Understanding between the International Association for Geoethics and the Geological Society of Africa**. Madrid and Vienna, 26.04.2013.
- Nemeč, V., 2012. **Geoethics and Sustainability**. 2nd World Sustainability Forum, 1-30 November 2012. Sciforum Electronic Conferences Series, 2012.
- Priberam Informática, S.A, 2012. **Dicionário Priberam da Língua Portuguesa. Definição de Ética**. <http://www.priberam.pt/DLPO/default.aspx?pal=%C3%A9tica> (acedida em 2012.09.10).
- TEB, 1911. **Ethics**. in *The Encyclopaedia Britannica (TEB)*: a dictionary of arts, sciences, literature and general information. 11.^a ed. New York, 1911. pp. 808-845.
- Vasconcelos, L., 2012. **Geoética**. Keynote to the 1st Congress of Geology of Mozambique, Maputo, 21-23.11.2012.
- Velasquez, M.; Andre, C.; Shanks, T. S.J. & Meyer, M.J., 2010. **What is Ethics?** This article appeared originally in Issues in Ethics IIE V1 N1 (Fall 1987), Revised 2010. <http://www.scu.edu/ethics/practicing/decision/whatisethics.html> (acedida em 2012.09.10).

Referred bibliography in consulted works

- Bezzi, A., 1999. **What is this thing called geoscience? Epistemological dimensions elicited with the repertory grid and their implications for scientific literacy**. Science Education, 83, 675–700.
- Chalk, R.; Frankel, M.S. & Chafer, S.B., 1980. **AAAS Professional Ethics Project**. American Association for the Advancement of Science, 1515 Massachusetts Ave. NW, Washington, D.C. 20005. AAAS Publication 80-R-4.
- Collins Publishers Staff, 2006. **Collins Concise Dictionary and Thesaurus**, HarperCollins, 4th Revised edition, pp. 1216.
- Stephenson, D., 1997. http://tierra.rediris.es/Geoethics_Planetary_Protection/GSA_Ethics_in_the_Geosciences.pdf
- Unión Profesional, 2009. **Deontología profesional: los codigos deontológicos**. 40 pp.