

Geoethics – for Society, Geosciences and Geoscientists

Purpose of these slides: To provide some background to my contribution at #vEGU21: "Geoethics, A Philosophical Hybrid of European Origin" (EGU21-604)



I like to thank Silvia, Eduardo, and many other colleagues. Much that I show here does originate from their works.

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International Association for Promoting Geoethics (Rome, Italy),
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3rd Feb.21



Structure of the Slide-Show & two Statements

1. Take Home Message
2. Introduction
3. Socio-Historical Context of Geosciences*
4. The term 'geoethics' in the Literature
5. Tenets of **G**eoethics
6. Socio-Cultural Contexts of **G**eoethics
7. Summary

* **Geosciences, or Earth Sciences are...** "a range of applied and fundamental research fields, as well as related engineering disciplines and commercial undertakings. Together, they address the functioning of the Earth, the intersections of Earth and human systems, as well as the extraction and use of (abiotic) natural resources"



Philosophy is the science to engineer your thinking...

Introduction: Geoethics all azimuth ?

The **International Association for Promoting Geoethics** (IAPG) describes **Geoethics** on its websites as follows:

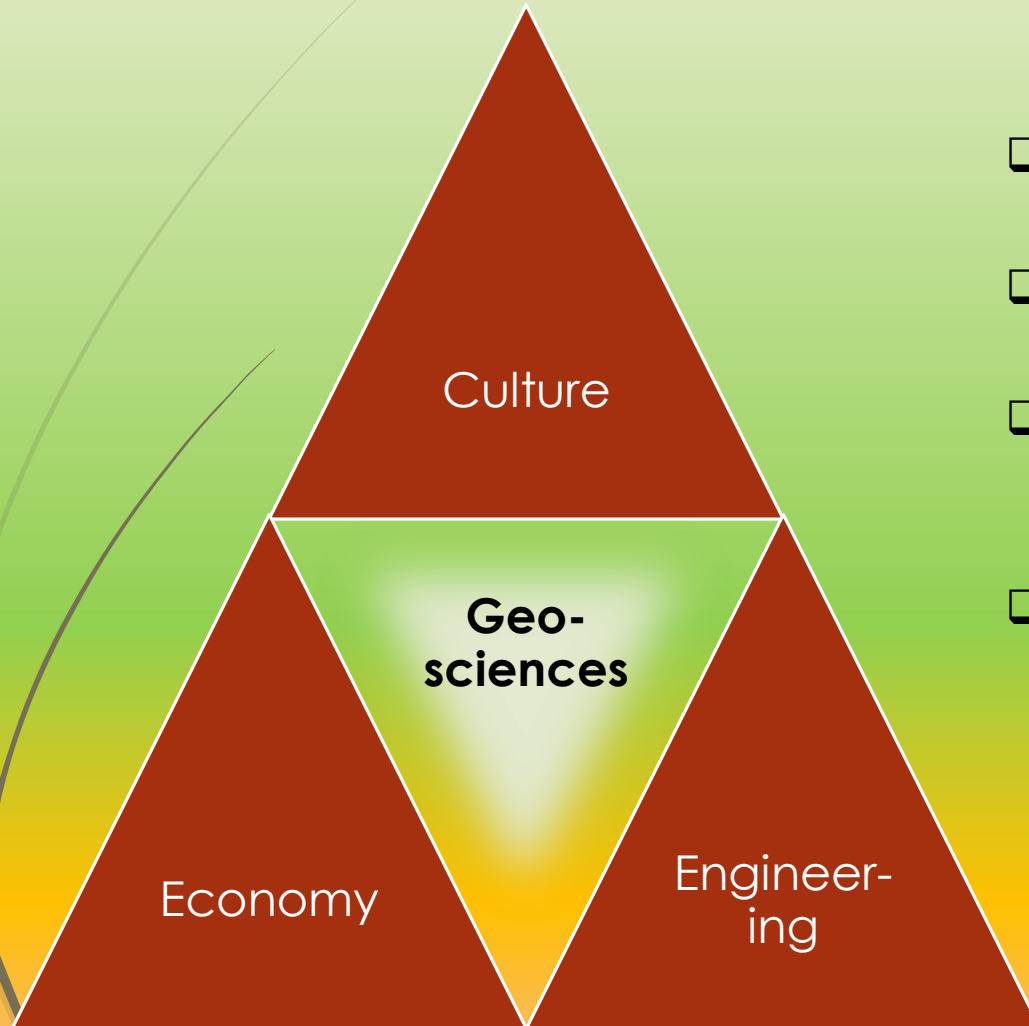
- **Geoethics** provides a reference and guidelines for behaviour in addressing concrete problems of human life by trying to find socio-economic solutions compatible with a respect for the environment and the protection of Nature and land.
 - ...reflects the social role played by Geoscientists and their responsibilities highlighting the ethical, cultural and economic repercussions that their behavioural choices may have on society.
 - ...encourages a critical analysis of the use and management of geo-resources.
 - ...deals with problems related to the risk management and the mitigation of geohazards.
 - ...fosters the proper and correct dissemination of the results of scientific studies and other information on risks.
 - ...aims to improve the relationships between the scientific community, the mass media and the public.
 - ...promotes the development of the geoparks and geotourism, in order to create social awareness about the value of the geological heritage and geodiversity.
 - ...highlights the value and usefulness of the geological and geophysical knowledge in daily life by promoting disciplines like geo-medicine and forensic geosciences.
 - ...aims to organize effective teaching tools to develop awareness, values and responsibility, especially amongst the young people.
- Source: <https://www.uni-potsdam.de/de/geo/veranstaltungen/detail/2021-01-04-institutskolloquium-john-geissmann-university-of-texas>

My take home message:

Geoethics = being aware of the societal context(s) of the geosciences

Introduction (2 / 5)

High level context



- ❑ The Human Niche is the planetary network of twinned natural and cultural landscapes.
 - ❑ Geosciences / geoscientists co-shape the development of the human niche.
 - ❑ Bundled by global supply chains, humans restlessly alter the human niche through engineering, production and consumption.
 - ❑ **Geoethics** explores cultural substrates (*values, interests, historical development, etc.* = *what ever describes societal contexts*) from a geoscience perspective.
- **Bohle et al. 2019**, Exploring Geoethics - Ethical Implications, Societal Contexts, and Professional Obligations of the Geosciences. Palgarve, 214p.

Introduction (3 / 5)

- **Hits in Google:**
 - 11.500.000 for 'bioethics'
 - 164.000 for 'geoethics'

...two orders of magnitude difference.
- **Hits in Google Scholar for 'geoethics' (without citations):**
 - 1900-1990: 3 (*all with erroneous publication dates*);
 - 1991-2000: 29 (e.g. works of W. Lynn; a geographer*);
 - 2001-2010: 119;
 - 2011-2015: 395;
 - 2016-2020: 826;

...an emerging subject.
- **other literature databases:**
 - counts are an order of magnitude lower
- **first paper in NATURE about 'Geoethics': Mogk and Bruckner, 2020, "Geoethics Training in the Earth and Environmental Sciences."**

* Brennetot, Arnaud. 2020. "Géoéthique Professionnelle, Géoéthique Prescriptive et Géoéthique Analytique. Pour Une Approche Constructiviste de La Dimension Éthique de l'Espace des Sociétés." *Cybergeo: European Journal of Geography*, no. 959. <https://doi.org/10.4000/cybergeo.35650>.

Introduction (4 / 5)

Definition¹ of **Geoethics** (<https://www.geoethics.org/definition>) in geosciences:

¹ by the IAPG

- **Geoethics** consists of research and reflection on the values which underpin appropriate behaviours and practices, wherever human activities interact with the Earth system.
 - **Geoethics** deals with the ethical, social and cultural implications of geoscience knowledge, education, research, practice and communication, ...
 - **(added)** ...providing a point of intersection for Geosciences, Sociology, Philosophy and Economy.
- Added 2019 & 2020
 - **Geoethics** represents an opportunity for geoscientists to become more conscious of their social role and responsibilities in conducting their activity.
 - **Geoethics** is a tool to influence the awareness of society regarding problems related to geo-resources and geo-environment.

Responsible
Science

Scientific Culture

Introduction (5 / 5)

1. Initially, **Geoethics** was conceived by geoscientists for geoscientists, that is, for their professional functions in various societal contexts.
2. Subsequently, with the Cape Town Statement on **Geoethics** (2016, 35th IGC) as intermediate step,...

Timeline 2010-2020

...**Geoethics** evolved towards a logic for citizens' [geo]ethical interactions with the Earth System;

...namely, to act (tenets):

...my views.

- ❖ (1) actor-centric, (2) virtue-focused, (3) responsibility-focused, (4) [geo]science knowledge-based, (5) all-actor-inclusive, and (6) universal-rights based;

- **Di Capua, Peppoloni, and Bobrowsky**, "The Cape Town Statement on Geoethics."; **Bohle, Peppoloni, and Di Capua**, "Viewing Earth and World through the Geoethical Lens."; **Marone and Bohle**, "Geoethics for Nudging Human Practices in Times of Pandemics."

Socio-Historical Contexts of Geosciences (1a / 4)

- The European post-medieval cultural models led
 - I. *to engage* early with scientific studies of Earth,
 - II. *to merge* science, research, engineering, economy and applied ethics into a massive societal venture,
 - III. *to shape* global hegemonic societal practices, and
 - IV. *to mobilize* gigantic physical, mental, and economic resources.

...European Cultural Models...

- **Reinhard**, Die Unterwerfung Der Welt - Globalgeschichte Der Europäischen Expansion 1415-2015.; **Mokyr**, A Culture of Growth - The Origins of the Modern Economy.; **Mokyr**, "Institutions and the Origins of the Great Enrichment."; **Weber**, Politik Als Beruf.; **Malanima**, Europäische Wirtschaftsgeschichte 10-19. Jahrhundert.; **Hall**, History of the Earth Sciences during the Scientific and Industrial Revolutions with Special Emphasis on the Physical Geosciences.; **Denevan**, "The 'Pristine Myth' Revisited."; **Fressoz**, L'Apocalypse Joyeuse - Une Histoire Du Risque Technologique.; ...

Socio-Historical Contexts of Geosciences (1b / 4)

□ These

...European Cultural Models...

*provide our / the socio-historical foundation of geosciences (including **G**eoethics) because these models required the societal application of geoscience expertise, irrespectively whether the individual, collective or institutional (human) agents have been aware of it.*

- ...**Dyer-Witford**, "Struggles in the Planet Factory: Class Composition and Global Warming."; **Lewis and Maslin**, The Human Planet - How We Created the Anthropocene.; **Piketty**, Capital and Ideology.; **Lade et al.**, "Human Impacts on Planetary Boundaries Amplified by Earth System Interactions."

Socio-Historical Contexts of Geosciences (2a / 4)

- ❑ **Nowadays:** ample evidence has accumulated that the given societal practices of the globalised capitalist society may not sustain the current physical stage of the Earth System that geology calls 'Holocene'.
- Subsequently, a phase shift of the Earth System seems likely. An alternative stage, tentatively named 'Anthropocene', may fall into place.
 - The anthropogenic change of the global nitrogen cycle, starting with the development of industrial nitrogen fixation before WWI, is as illustrative as anthropogenic climate change.

...geosciences are on stage...

- **Waters et al.**, "The Anthropocene Is Functionally and Stratigraphically Distinct from the Holocene."; **Zalasiewicz et al.**, "The Anthropocene."; **Zhang et al.**, "Managing Nitrogen for Sustainable Development.";...

Socio-Historical Contexts of Geosciences (2b / 4)

❑ *Notwithstanding*

whether an epoch '**Anthropocene**' is added to the Geological Time Scale:

...geosciences are on stage...

✓ The message from the Earth science community that humans (may) alter the physical dynamics of Earth led to a very committed debate putting geosciences into the **centre of a discussion** about humans, society and nature .

- ...**Haff**, "Humans and Technology in the Anthropocene: Six Rules."; **Ripple et al.**, "World Scientists' Warning to Humanity: A Second Notice."; **Crutzen and Stoermer**, "The 'Anthropocene.'"; **Haraway**, "Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin."; **Latour et al.**, "Anthropologists Are Talking – About Capitalism, Ecology, and Apocalypse."

✓ **p.s. :** "...no anthropogenic climate change would happen without geoscientists finding coal, oil, and minerals, or forecasting weather for shipping commodities around the globe, estimating natural hazards for infrastructures, or stability of foundations of buildings, etc..."

Socio-Historical Contexts of Geosciences (3 / 4)

- ❑ **To be conscious** of the (i) natural processes, (ii) the socio-political drivers, and the (iii) cultural-ethical features of the human niche.
- ✓ Searching alternatives to the given development path...
 - Which one...? On what basis...? What **philosophical framework**...?

...geoethics' competitors...

- Various alternatives are proposed, for example, 'Mother Earth/Gaia', (good) 'Anthropocene' or 'Ecomodernism'...
- **Ward**, The Medea Hypothesis.; **Asafu-Adjaye et al.**, "An Ecomodernist Manifesto."; **Dalby**, "Framing the Anthropocene: The Good, the Bad and the Ugly."; **Lenton and Latour**, "Gaia 2.0."; **Drucker**, "The Technological Revolution: Notes on the Relationship of Technology, Science, and Culture."; **David and Foray**, "An Introduction to the Economy of the Knowledge Society.";...

Socio-Historical Contexts of Geosciences (4 / 4)

- ❑ Within the development of European cultural models, science evolved from an undertaking of a minuscule elite to a massive societal endeavour.
- ❑ Subsequently, the ethics of science gained relevance – as deontology and societal feature.

...explicit ethics of the geosciences...

- Explicit ethics of the geosciences (**Geoethics**) is a relatively recent field.
- ...**McNie, Parris, and Sarewitz**, “Improving the Public Value of Science: A Typology to Inform Discussion, Design and Implementation of Research.”; **Leys**, “The Scientist’s Code of Ethics.”; **Douglas**, “Science, Policy and the Value-Free Ideal”.; **Leopold**, A Sand County Almanac.

The term 'geoethics' in the Literature (1 / 3)

- International geoscience community used the term 'geoethics' since ~20 years (context: geosciences as a service to society);

...various meanings of the term 'geoethics'...

- ❖ ...are found, addressing planet Earth, Nature and World from different perspectives, e.g. political sciences or various aspects of geography.
- **Barr**, "Global Geosciences - Canada's Link with the World."; **Mutter**, "The Earth Sciences, Human Well-Being, and the Reduction of Global Poverty."; **de Mulder, Nield, and Derbyshire**, "The International Year of Planet Earth (2007–2009): Earth Sciences for Society."; **Cronin**, "Engineering Geology Must Be Dominated by a Public-Safety-Based Ethic."; **Cronin**, "On the Seismic Activity of the Malibu Coast Fault Zone, and Other Ethical Problems in Engineering Geoscience."; **Savolainen**, "Education and Human Rights: New Priorities."; **Stoddard and Cornwell**, "Peripheral Visions: Towards a Geoethics of Citizenship."; **Harley**, "Cartography, Ethics and Social Theory."; **Crampton**, "The Ethics of GIS."; **Brennetot**, "Pour Une Geoethique. Elements d'analyse Des Conceptions de La Justice Spatiale."; **Sánchez Guifián**, "La Aceptación Social Del Tracking Desde La Geoética."; **Lynn**, "Animals, Ethics and Geography."

The term 'geoethics' in the Literature (2 / 3)

- Also, in geosciences or environmental sciences alternative notions (e.g. 'geo-logic' or 'geographical ethics') are used to label philosophical thinking that overlaps with **Geoethics**.
 - Within sciences exist distinguishable schools of thinking that use the label 'geoethics'.

• **Frodeman**, *Geo-Logic: Breaking Ground Between Philosophy and the Earth Sciences*. **Frodeman**, "Hermeneutics in the Field: The Philosophy of Geology."; **Cutchin**, "Ethics and Geography: Continuity and Emerging Syntheses."; **Forbes and Lindquist**, "Philosophical, Professional, and Environmental Ethic."; **Peppoloni, Bilham, and Di Capua**, "Contemporary Geoethics Within the Geosciences."; **Byrska-Rapała**, "Geoetyka a Społeczna Odpowiedzialność Przemysłu Surowców Energetycznych."

...personally:

- ❖ I cooperate with the **IAPG**; member of their board of experts.

The term 'geoethics' in the Literature (3 / 3)

- The term 'geoethics' also carries a spontaneous meaning.
 - 'Ethics' is understood to be about moral obligation towards human and non-human living beings, and 'geo' relates to the world around us.
 - Hence, '*geoethics*', so the apparent spontaneous understanding, is about to do the right thing on Earth; be it to protect the environment or to promote sustainability.

...geoethics a buzzword?

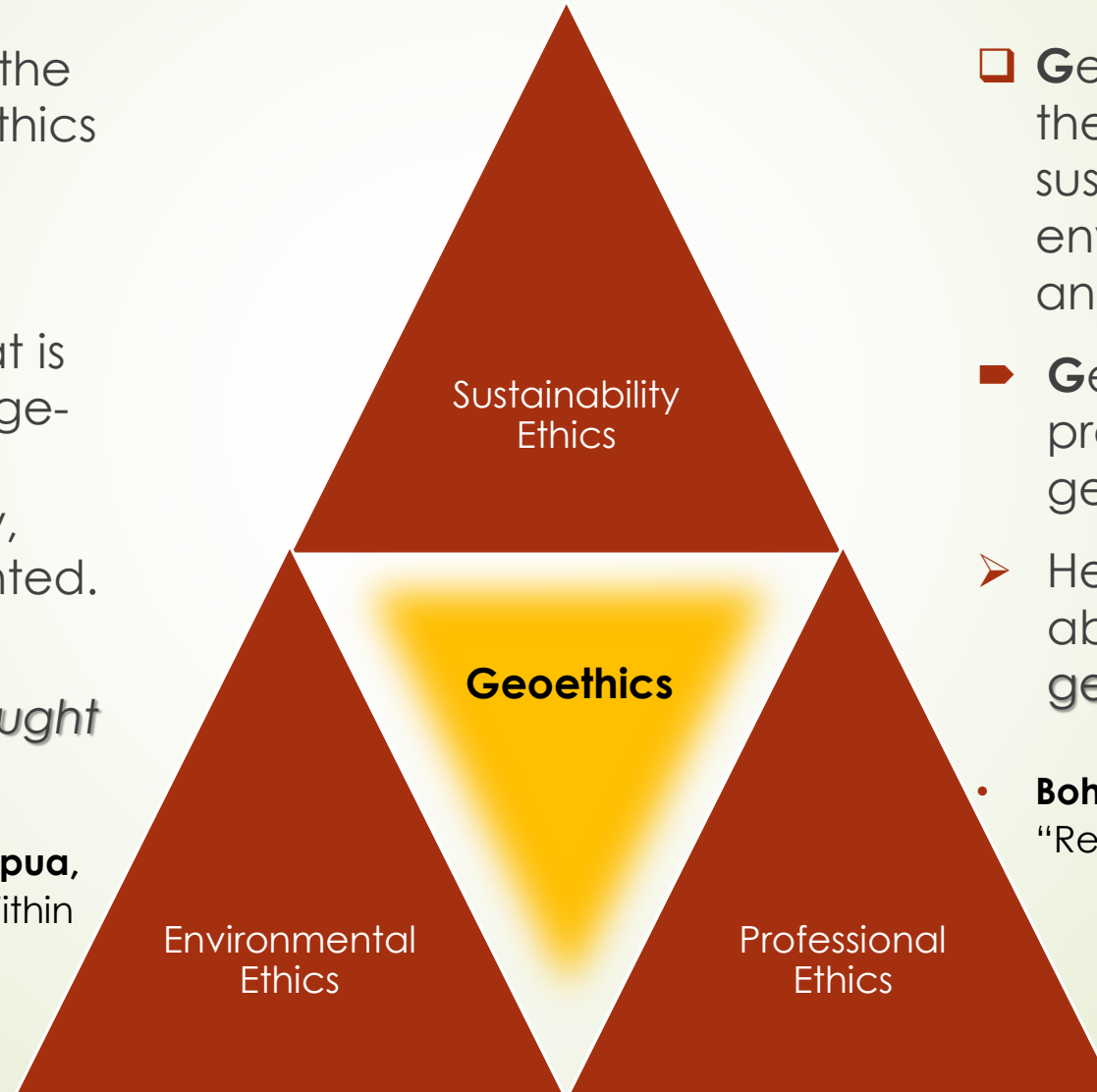
- The term 'geoethics' easily may be associated with concepts like 'Mother Earth', that is, thoughts about environmental justice or a kind of Gaian Ethic'.
 - **Anonymous**, "Découvrir La Géoéthique à Travers Le Territoire Brésilien: Justice et Injustice Spatiales."; **Kopnina**, "Environmental Justice and Biospheric Egalitarianism: Reflecting on a Normative-Philosophical View of Human-Nature Relationship."; **Weston**, "Forms of Gaian Ethics."

Tenets of Geoethics (1 / 3)

- ❑ *As School of Thought*; the central tenet of **Geoethics** is the virtuous and responsible individual (human agent) who pursues a practice that is geosciences knowledge-based, just, equitable, inclusive, participatory, and ecologically oriented.

➤ That is an aspirational description of '*what ought to be done*'.

- **Peppoloni, Bilham, and Di Capua**, "Contemporary Geoethics Within the Geosciences."



- ❑ **Geoethics** is situated at the intersection of sustainability ethics, environmental ethics, and professional ethics.
- **Geoethics** is supporting professionals that apply geoscience expertise.
- Hence, **Geoethics** is about responsible geosciences.
- **Bohle, Di Capua, and Bilham**, "Reframing Geoethics?"

Tenets of Geoethics (2 / 3)

- ❑ The **central tenets*** of **Geoethics** got re-formulated
 - for educational purposes in the 'Geoethical promise' or
 - as programmatic statement in the 'Cape Town Statement on Geoethics' (2016, 35th IGC);
 - as conceptual vision in a recent paper (2020) by S. Peppoloni & G. Di Capua

* **actor-centric, virtue-focused, responsibility-focused, geoscience knowledge-based**

Matteucci et al., "The 'Geoethical Promise': A Proposal."
Di Capua, Peppoloni, and Bobrowsky, "The Cape Town Statement on Geoethics."
Peppoloni and Di Capua, "Geoethics as Global Ethics to Face Grand Challenges for Humanity."

- ❑ Often **Geoethics** is conceived / phrased to trigger affective & aspirational associations;
 - ...geo-heritage, geo-diversity & geo-conservation as cultural values;
 - ...e.g. "virtuous individual"

...to the irritation of some:

Tenets of Geoethics (3 / 3)

...an irritated peer wrote:

“the whole thing [Geoethics] consists of an idealist-based approach... According to such approach, the world is idealised as a sum of individual atoms deprived of any social character and of any capability of social and collective actions but, rather, their possibility to act upon society is restricted only to their actions as individuals.,... there is obviously not even a single word about the structural determinations upon individuals in the particular form of social organisation where they live.”

❖ **Source:** Anonymous review published in Quaternary (2019);

https://www.mdpi.com/2571-550X/2/2/19/review_report (1st round reviewer 2 report)

Research question: ...idealistic and/or materialistic philosophies ?

Socio-Cultural Contexts of Geoethics (1 / 4)

- **Recall:** Geoethics is a product of European cultural models.
- Hence, European philosophies shape **G**eoethics.
 - It implies, *for example*, to depict Culture and Nature distinctively using idealistic and materialistic philosophies.
 - See, for example, the Culture-Nature-Dichotomy of “*appropriate behaviours and practices, wherever human activities interact with the Earth system*” and the related anthropocentric interpretation of the human condition.

...European Cultural Models...

- **Hamilton, Bonneuil, and Gemenne**, “The Anthropocene and the Global Environmental Crisis: Rethinking Modernity in a New Epoch”.; **Latour**, “Down to Earth - Politics in the New Climatic Regime”.; **Dryzek and Pickering**, “The Politics of the Anthropocene”.; **Bohle et al.**, *Exploring Geoethics - Ethical Implications, Societal Contexts, and Professional Obligations of the Geosciences*.

Socio-Cultural Contexts of Geoethics (2 / 4)

- ❑ The concepts that underpin Geoethics draw only on Western cultures.
 - Specifically, **Geoethics** draws on Aristotelian & Kantian models that put the human agency at the centre.
 - No reference is made to cultural models of other parts of the world; e.g. non-Western models, such as African Ubuntu culture or Buddhist, Chinese, Indian, or Islamic cultures.

...about choices.

- ❑ Initially, **Geoethics** was about ‘*professional ethos*’ and ‘*responsibility concerns*’, that is, how geo-professionals situate themselves in professional contexts.
- **Therefore**, **Geoethics** was conceived as a *virtue-ethics* with the *responsible* and *geoscience knowledgeable individual* as a central tenet.
- **Marone and Bohle**, “Geoethics for Nudging Human Practices in Times of Pandemics.”; **Peppoloni S., Di Capua G., Bobrowsky P.T.**, “Geoethics: At the Heart of All Geosciences”.; **Gundersen**, “Scientific Integrity and Ethics: With Applications to the Geosciences”.; **Nurmi**, “Green Mining - A Holistic Concept for Sustainable and Acceptable Mineral Production.”

Socio-Cultural Contexts of Geoethics (3a / 4)

- ❑ Geoethics exhibit a systemic pluralism; namely leaving the human agent the choice of the specific ethical framework.
 - ▶ **Consequently**, in **Geoethics** a sound ethical practice may alter with the ethical framework that is used by the human agent.
- ❑ Such a 'pluralism by design' allows that a diversity of cultures can be accommodated, although conditioned by the two tenets 'individual accountability' and 'scientific knowledge-base'.
 - ▶ The first tenet implies a substantial Kantian overhead.
 - ▶ The second tenet implies deep roots in the European enlightenment.
- **Jax et al.**, "Ecosystem Services and Ethics."; **Purdy**, *After Nature: A Politics for the Anthropocene.*; **Adler and Treich**, "Prioritarianism and Climate Change."; **Ott**, "Institutionalizing Strong Sustainability: A Rawlsian Perspective."; **Potthast**, "Ethics in the Sciences beyond Hume, Moore and Weber: Taking Epistemic-Moral Hybrids Seriously."

...relativism?

Socio-Cultural Contexts of Geoethics (3b / 4)

- ❖ **Recall:** Geoethics uses intermediate normative settings without referring to specific ethical frameworks that would prescribe what ought to happen.
 - **Instead**, geoethics is constrained by scientific knowledge, but...
 - ...“is context-dependent in space and time and ...[has] a strong awareness of the technical, environmental, economic, cultural and political limits existing in different socio-ecological contexts”. Di Capua and Peppoloni, Defining Geoethics (<http://www.Geoethics.Org/Definition>).

...subsequently:

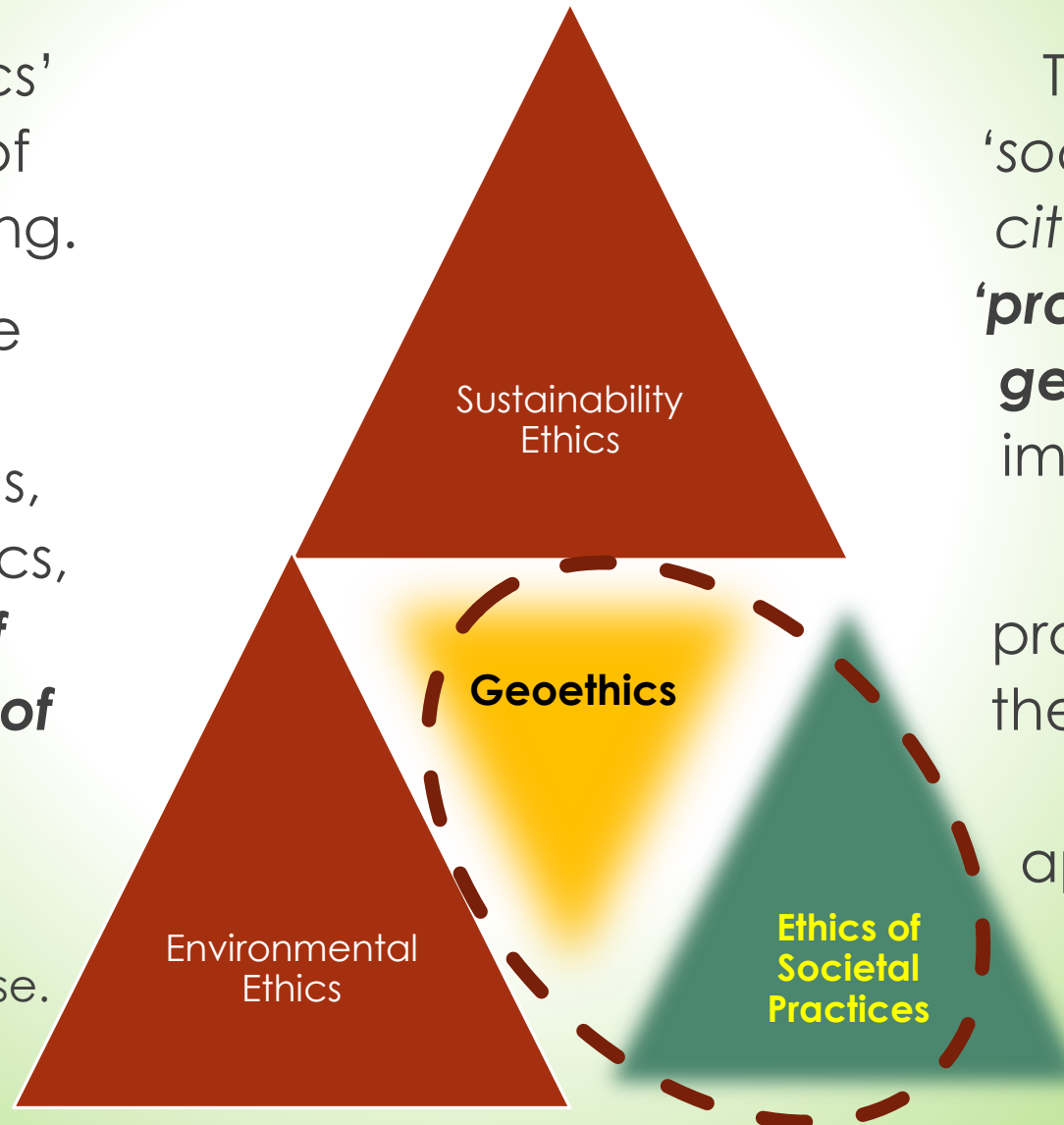
- ...studying the concepts that underpin geoethical thinking of geo-professionals led to consider how **Geoethics** may support citizen when intervening into the Earth System;
- ...studying geoethical thinking for times of global anthropogenic change led to consider **Geoethics** as a reflection about governance (collective & institutional human agent).
- **Bohle and Marone**, “Humanistic Geosciences and the Planetary Human Niche.” ; **Bohle and Bilham**, “The ‘Anthropocene Proposal’: A Possible Quandary and A Work-Around.”; **Marone and Bohle**, “Geoethics for Nudging Human Practices in Times of Pandemics.”; **Bohle**, “Geoethics for Operating in the Human Niche.”;

Summary (1 / 2)

The term 'geoethics' labels a manner of philosophical thinking.

It is situated at the intersection of sustainability ethics, environmental ethics, and the **ethics of societal practices of citizens**.

The school of thinking 'Geoethics' within geosciences is a subcase.



The ethics of the 'societal practices of citizens' include the **professional ethics of geoscientists** as an important subcase.

This variant of professional ethics is the foundation for a sound societal application of the geosciences.

Summary (2 / 2)

- ❑ 'Geoethics' is a school of thinking within geosciences that initially had only a discipline-specific application.
 - ❖ However, the design of geoethics does not limited it to a discipline-specific application & the label 'geoethics' is a generic semiotic sign.
- ❑ 'Geoethics', when understood as a semiotic sign ('geoethics') could refer to...
 - ...the widespread use of geoethical thinking and action as a societal practice.
- ❑ 'Geoethics' calls for special attention to the societal use of geosciences expertise...
 - ...because it is paramount for a sustainable stewardship of the human niche.

***...we cannot
walk away from
it, we have to
tackle it!***

stewardship



Some useful references – list available

Heidelberg talk 3rd Februar 2021 11:00

Link: <https://audimax.heiconf.uni-heidelberg.de/4tgt-z9nx-ghrj-cy4r>

Geoethics – for Society, Geosciences and Geoscientists

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1

talk 3rd Februar 2021 11:00

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Thank You

A recent publication (open access): „**Geoethics, a Branding for Sustainable Practices**“ <https://www.mdpi.com/2071-1050/13/2/895>