



Reframing Geoethics?

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Abstract Geoethics is an emerging and expanding field which is deepening its philosophical foundations and strengthening its interactions with other disciplines. Such expansion may be in tension with the need for geoethics to be a focused framework to support geoscientists in their work. There is also a risk of ‘geoethics’ being used as a catch-all term for reflection and research when considering human actions within the Earth system. The chapter reflects on how the scope of geoethics might be constrained. It suggests that geoethics might be framed as relating to the practices and values of any human agent as part of the Earth

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system, whereas the complementary notion of ‘geosophy’ could be used to refer to the broader considerations regarding human–Earth system interactions.

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Geoethics is a way of thinking that addresses the ethical implications, societal contexts and professional obligations of geosciences. This book takes stock of its state of play. It provides a framework, offers nuances and advocates extending the subjects that inquiries into geoethical thinking address. This stocktaking exercise should consolidate geoethics within geosciences. Likewise, it should serve to reach out to natural and social sciences, in general, as well as to humanities including arts.

Three generic features emerge from discussing geoethics that characterise its current state of play. First, geoethical thinking means considering the ethical implications of geoscience expertise and practices, not just in professional contexts but also in broader societal contexts. The call to the individual for conscious ethical behaviour is the central pivot of the current concept of geoethics. Second, geoethical thinking offers values but not a distinct canon of underpinning ethical norms that is specific to a given set of geoscience subjects. Instead, the norms that are proposed draw on ethics in general and the regular practices of geosciences, taking into account the diversity of the local conditions of nature and people, and of the temporal and spatial scales at which research, its application and associated professional practices are carried out. Third, geoethical thinking also addresses subjects that could just as well be considered in different thematic contexts, namely as ‘environmental ethics’, ‘sustainability ethics’, ‘technological and engineering ethics’ or ‘professional ethics’. Although geoethical thinking can be embedded into each of these contexts, geoethics seems distinct because it is situated at the intersection of them. Geoethics has a nucleus that renders it distinct—namely, an actor-centric virtue ethic of professional geoscientists, who ground their responsible action on the corpus of geoscientific knowledge (including knowledge of its limits) and who recognise their contribution to shifting the cultural paradigms of the interwoven-ness of societal and natural environments towards more

sustainable stewardship of the Earth system. Ultimately, geoethical thinking could guide the action of professionals, various societal stakeholders and citizens.

5.1 RECOGNISING A CHALLENGE

In the previous chapters, geoethical thinking was discussed in three frameworks, namely the geoscience professions, the societal implications of geosciences and the building of a planetary human niche. The sequence of these frameworks extends stepwise the perimeter of matters which geoethics might address, for people acting as responsible citizens as well as for geoscientists acting in a professional capacity. These frameworks illustrate the dovetailing of geoscience knowledge with the economic and societal practices of contemporary societies, which in turn emphasise the possible societal function of geoethical thinking.

While it is societally necessary and intellectually rewarding to explore the range of matters that relate to geoethical thinking, the resulting spread may cause geoethics to lose its operational focus. It is a justified concern in respect of professional practices that geoethics needs a distinct operational focus, to strengthen and deepen its effectiveness in supporting individual geoscientists, and to promote its practical adoption by these individuals. If geoethics were to be consolidated around practical (including professional) needs, this would establish it as a ‘conventional norm’ on Kohlberg’s scale of moral adequacy (see Chapter 4). It would set geoethics at an intermediate normative level. As such, it would be insufficient to inspire, as advocated above, shifting the cultural paradigms of the dovetailing of societal and the natural environments towards more sustainable stewardship of the Earth system. Furthermore, geoethics benefits from exposure to other ways of thinking including, for example, exchanges with inquiries into environmental ethics or sustainability ethics. Hence, current inquiries into geoethics face an obvious tension between expanding or focusing, that is, expanding the subject matter, scope or ambition of geoethics in ways such as those explored in the preceding chapters, or focusing it as an effective operational support for professional geoscientists. The tension between these two justified concerns should be handled so as to avoid arbitrary choices.

Taking first a semantic view: when interpreting the etymological roots of the notion geoethics, as explored in Chapter 2, geoethics could have a vast scope. Otherwise, turning to the definition of geoethics, the

matters discussed in this book demonstrate that geoethical thinking may evolve beyond either ‘reflection on the values which underpin appropriate behaviours and practices, wherever human activities interact with the Earth system’ or ‘the social role and responsibility of geoscientists in conducting their activities’ (Peppoloni and Di Capua 2017, p. 2, emphasis added here). When using this definition, the application scope of geoethics is more limited than the etymological analysis indicates. Building on the definition, the somewhat vague expression ‘geoethical thinking’ may refer to matters that are inspired by geoethics but follow many different paths.

Anticipating the tension between expanding or focusing, three questions have been addressed implicitly in the previous chapters. First, what is the necessary corpus of geoethics that serves the professional needs of geoscientists? Second, what are matters adjacent to this corpus, that should be added into it, to further societal stewardship, exercised by an individual who is both a citizen and a geoscientist? Third, is there a case for a notion that is complementary to geoethics and provides a means to handle the tension that arises from extending the scope of geoethics? In the instance that such a notion can be found, it might capture matters that relate to the geosciences and their interactions with society and the natural world, but that concern subjects other than ethically sound (professional) behaviour. Consequently, the application scope of geoethics would be constrained, and so the risk of its deteriorating into a catch-all term would be reduced.

Regarding the first two questions, the matters outlined in the Chapter 2 of this book address how to configure the nucleus of geoethics. The matters discussed in the Chapters 3 and 4 enlarge this initial configuration very much and illustrate wider geoethical thinking. Thus this book exhibits the tension between expanding or focusing geoethics.

5.2 EXPANDING VERSUS FOCUSING?

Aligned with reflections in many scientific communities, inquiring ‘what is meant by acting in an ethical manner’ is ongoing in geosciences. These inquiries can be located within wider efforts that have been undertaken under the label ‘responsible science’ since the turn of the last century (United Nations 2013). In this context, some geosciences constituencies, initially addressing matters relating only to geology rather than to geoscience more widely, aggregated inquiries into ethical matters under the

label 'geoethics'. They started studying geoethics from various angles. Furthermore, 'acting ethically in geosciences' is found to be inspired by a wide range of concerns.

Notwithstanding the considerable efforts undertaken in the last decade by the geoethics community, the list of geoscience subjects for which geoethical inquiries are partly or entirely lacking is a long one; it includes, for example, geoengineering, climate change, artisanal mining, deep-sea mining and differential mortality in geo-hazards depending on social status. Likewise, exploring the grounding of geoethics in different ethical norms is missing from the published literature and will need cooperation with scholars outside geoscience communities. Hence, the current development path of geoethics seems to be about expanding. When considering the matters presented in this book, it is apparent that the development of geoethics has not yet even reached an inflection point. In this context, limiting the expansion of the application scope of geoethics would seem to be an act of unjustified intellectual coercion. In its current configuration, geoethics, as an emerging subject, is driven by the necessity to create a conceptual and practical framework for the work of geoscientists in the context of the complexity of the interactions between humans and the Earth system. Its promoters, mainly applied geoscientists, have progressively framed suitable ethical orientations for their professions. On many occasions, their inspiration has come from practices within chartered geoscience professions, which frame the interaction of geoscientists and clients, geoscientists and public institutions, geoscientists and mass-media, citizens or decision-makers through codes, guidelines and established practices. Resting on these foundations, geoethics as it currently stands has been designed to guide the conduct of scientific and professional work, to facilitate the civic involvement of geoscientists and to build the credibility and legitimacy of geosciences within the fabric of society. As outlined in this book, these professional matters have a broad and diverse scope, that will increase as the economic and societal applications of geosciences grow further. In this sense too, the development path of geoethics is about expanding.

In light of the case for extending the scope of geoethics, potentially across multiple dimensions, like those outlined above, it may be helpful to debate how geoethics could be framed in such a way that it retains its identity (and therefore its operational usefulness) without constraining its expansion and development.

One line of thought for opening these debates might be to consider a notion like ‘geoethics proper’. The term itself is a little awkward, but could be coined to relate to the research, studies and practices of professional geoscientists who study the abiotic (inanimate) natural world and professional intervention into it (mainly by geoscientists). Although such a limitation of scope may sound practical and would distinguish geoethics from environmental ethics, it would obscure the fact that interactions of the biosphere and geosphere shape Earth system dynamics. Furthermore, human thinking about ‘appropriate interventions’ often treats as a continuum the abiotic (inanimate) and biotic (living) world, including any possible impact on people. Hence, an attempt to focus geoethics only on the abiotic natural world, and human interventions into it, seems unsatisfactory.

To take another attempt to explore limits to the application scope of geoethics, the fact could be considered that geoethics has been designed to focus on the agent, its deeds and the virtue ethics pertaining to these deeds. The focus on the agent immediately begs the question ‘who is an agent?’ An obvious agent in the case of human–geosphere interactions is the geoscientist acting in a professional capacity. However, the agent may be any professional that uses geoscience expertise in an explicit manner or any citizen who is benefiting implicitly from geoscience expertise when acting as a member of civil society or as a consumer. The idea of constraining geoethics in terms of specifying the agent therefore looks problematic too.

Moreover, if, as a hypothesis, geoethics were understood to be a tool for the ‘geoscientist acting in a professional capacity’, then a description would be needed of the disciplines that geosciences include. When undertaking this quest, it becomes evident that, at best, one may identify a nucleus of disciplines to which many may agree; and to which additions could be made as felt suitable according to individual preferences. Early studies of the Earth could broadly be sketched as having had two primary configurations—geography and geology—with geography describing the surface of the Earth including human activity and geology describing features below the Earth’s surface. This sketch is somewhat incomplete because other expertise, such as that relating to minerals, mining or civil engineering, was part of the picture from the outset. With the emergence of modern natural sciences, geosciences became more clearly differentiated from geography, and while the human dimensions of geography remained at its heart, those relating to geoscience have

tended to be seen as peripheral matters arising from the application of science rather than being a fundamental part of it. However, interactions with social processes are vitally important in both geography and geosciences, including through commercial and industrial applications, human health and wellbeing, and social development. Examples include hazard mitigation or urban planning when studying the supply of water and power or urban climate. It is a matter of choice, also driven by personal preferences, where to locate any border zone between geosciences and related fields. Cutting through the entangled geo-disciplines, it may be stated that geosciences refer to 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. Given this application case, scholarly inquiry into the interfaces between geosciences and social sciences and humanities is germane, including into geoethical thinking. However, the difficulty of drawing an effective and objective boundary around the geosciences for this purpose would make it difficult to limit the scope of geoethics on this basis.

Drawing on the above, conceptually limiting the application scope of geoethics in terms of ‘natural domain’ (i.e., the geosphere), ‘agent’ (i.e., professional geoscientists) or ‘intellectual domain’ (i.e., geosciences) does not deliver a clear specification. Having discussed the prospects of limiting the scope for geoethics, an explicit programme of its expansion is an alternative option. The choice of embracing such a programme of expansion would build on the insights arising from attempts at limiting the scope of geoethics explored above.

The application of geosciences expertise may happen explicitly through the activities of professional geoscientists, implicitly in other professions or public governance, or embedded in the daily actions of any citizen. All these actions are part of how human activities and the geosphere intersect, and these are entangled with the biosphere too. The production systems and consumption patterns that sustain the human population are complex adaptive socio-ecological systems that give rise to the broad and diverse range of applications of geoethics, from natural hazards to mining, construction, the shaping of landscapes and geoengineering. By the same token, geosciences are entangled with other disciplines, including natural sciences, social sciences and humanities.

Understood in this manner, the possible application range of geoethics goes well beyond providing a framework for geo-professionals only. Thinking geoethically may provide a framework for many professions and organisations across a wide range of societal challenges, and offer a means of orientation for other citizens, all of whom are agents whose daily activities intersect with the geosphere in numerous ways. Geoethical thinking framed in this broad sense has the potential to be a fundamental public good, woven into the fabric of civil society, the literacy of citizens and our conceptions of democratic citizenry. However, an emphasis only on ‘ethics’ in such a framing may be too narrow, and a further notion may therefore be needed that can be used alongside geoethics.

5.3 GEOETHICS AND GEOSOPHY

Seeking a notion that is complementary to geoethics, bibliographic research suggests terms such as ‘geo-humanities’, ‘humanistic geosciences’ or ‘geosophy’ (Wright 1947; Mouchang 2011; Sörlin 2012; Castree et al. 2014; Hawkins et al. 2015; Holm et al. 2015; Blankenship 2018; Shaw 2017). When considering the meaning of ‘geo-humanities’ or ‘humanistic geosciences’, for example, it seems evident that they could refer to a composite body of expertise composed from natural sciences, engineering, social sciences and humanities. But the notion ‘geo-humanities’ is already used by geographers with specific meanings and purposes. The notion ‘geosophy’ seems to offer an appropriate meaning, by the construction of the term, to refer to knowledge about Earth. On first sight, without further analysis, for example, of its etymological roots, the notion ‘geosophy’ seems convenient for the present context. Although conceived in 1947 by Wright, as discussed in the previous chapter, the term has not been taken up into the scholarly vocabulary. Therefore the notions ‘geosophy’ and ‘geoethics’ might be an appropriate pair to encompass together the societal context, implications and obligations of geosciences, leaving open for exploration what is the middle ground between them, depending on the role of the human agent for a given issue.

In view of whether to expand or focus the application scope of geoethics, it should be explored whether the notions ‘geoethics’ and ‘geosophy’ together may describe comprehensively insights into the human–Earth system, and hence the building of a planetary human niche. In such a framework, the core of geoethics would be an ‘an

actor-centric and enriched geo-professional ethics’, in the sense described by the Cape Town Statement on Geoethics (Di Capua et al. 2017):

Geoscientists have know-how that is essential to orientate societies towards more sustainable practices in our conscious interactions with the Earth system. When applying a wider knowledge-base than natural sciences, then geoscientists need to take multidisciplinary approaches to economic and environmental problems, embracing (geo)ethical and social perspectives. Geoscientists are primarily at the service of society. This is the deeper purpose of their activity.

When reaching out beyond its initial core, geoethics would encompass matters that are relevant for the human–Earth system and address any human agent who is explicitly or implicitly using geoscience knowledge in its actions. As a complement, the notion ‘geosophy’ would encompass matters that are relevant for the understanding of the human–Earth system but that relax the focus on the human agent. Hence, geosophical and geoethical thinking would embark on inquiries into the human condition in contemporary times of anthropogenic global change. Geosophical thinking would focus on the relevant knowledge base, compared with geoethical thinking that has its focus on the actions of the human agent and the consequences of them. The balance between both notions provides for exploring the mutual limitation of their respective operational scopes, within which the tension between expanding or focusing of geoethics could be handled. As an example, geoscience literacy as a knowledge base would be part of geosophy. However, development and application of geoscience literacy jointly with other knowledge bases would be part of geoethics, “*wherever human activities interact with the Earth System*” (Peppoloni and Di Capua 2017, p. 2). That is, geoethics is designed with clear operational criteria that it is about the deeds and values of the human agent as part of the Earth system.

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