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Historical Geoanthropology

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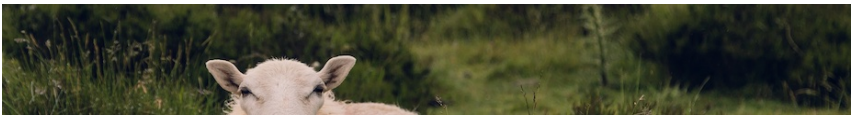
Introduction to the special issue on Historical Geoanthropology. Our inquiry moves from the conviction that quite recent geoanthropological developments cannot be fully understood without reconstructing their origins with methods deriving from the historical and cultural disciplines, socio-economic history, and the history and philosophy of technology. We believe that humanistic research has the potential to show the interconnectedness of dimensions—social, political, intellectual, scientific, and environmental—that characterize humanity in the Anthropocene, and, possibly, to open up new social-ecological perspectives.



Anthropocene research has identified the 'Great Acceleration' of the last 70 years as the time of the emergence of humankind and as a major geological force (Steffen et al. 2015). On the one hand, the Anthropocene as a concept and label has contributed to raise awareness of the dramatic transformative impact of humans on the Earth. On the other, however, such a limited timeframe risks

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underplaying the relevance of the longue-durée cultural histories that led to this outcome. Hence, the leading questions of this special issue: What role can history play in the assessment of the planetary environmental crisis? Can history be useful to conceive of—or even imagine—a future that overcomes the path-dependencies inscribed in our present? Our inquiry moves from the conviction that quite recent geoanthropological developments cannot be fully understood without reconstructing their origins with methods deriving from the historical and cultural disciplines, socio-economic history, and the history and philosophy of technology. We believe that humanistic research has the potential to show the interconnectedness of dimensions—social, political, intellectual, scientific, and environmental—that characterize humanity in the Anthropocene, and, possibly, to open up new social-ecological perspectives.

To be sure, the gravity of the present situation does not need many words or examples. Environmental researchers have even argued for the existence of a "consensus on consensus" on the anthropic causes of global warming on the part of natural scientists (Cook, Oreskes et al. 2016). The environmental drama has occupied center stage in the media. Last summer, we witnessed tragic images of the Pakistan floods—one of the worst such events in the historical records of the country, affecting about 33 million people. News on natural catastrophes of anthropic origin have become more and more frequent, alongside the increasing frequency of extreme events produced by climate change. In this same year 2022, we also witnessed unprecedented droughts in large regions of the globe, in Eastern Africa, Asia and Europe. The water scarcity of major rivers, which secure the existence of billions of people, adds one more item to the list of apocalyptic threats to humankind (Mauelshagen 2015). These threats point to the fragility of the ecological basis of our economies. The shrinking of the Yangtze River, for example, has received much attention, in part owing to the symbolic meaning of Chinese rivers as the places of origin of ancient and enduring civilizations (Mostern 2021, cf. Amrith 2018). Current difficulties to control water flows that have been quite successfully engineered and re-engineered for centuries (if not millennia) demonstrates the limits of our technological mastery of the elements and the political impasse connected with the great transformations of our epoch (Schmidt 2017). Unintended catastrophes of human origin—ranging from the burning forests of Australia, California and Amazonia, to the sinking hydropolis of Venice and the impending sixth mass

extinction—bear witness to the criticalities of extractivist economies (on which see Malm 2016 and Fraser 2021). Yet, some of the most worrying dangers of the day are by no means unintentional, as is the case with threats that an atomic weapon might be used in the Ukraine War. By reawakening the nuclear ghosts of the last century (Rhodes 1986), this war prolongs the irrational rationality of Cold-War geopolitics (Erikson 2013).

The most recent IPCC report (IPCC 2021) stressed the urgency to fix the broken mechanism of the spinning spheres of the Earth System that mediate between the 'anthropos' and the 'geo': the many spheres of the bios, the techne, the ergon and the nous.[1] And yet, although the diagnosis is very clear, the COP 27 Conference of the United Nations on climate change that took place in Sharm el-Sheik in November did not lead to significant resolutions, apart from the repetition of the mantra of reducing CO_2 emissions. Because environmental measures are at odds with economic and geopolitical priorities, they remain a matter of good intentions, while private interests prevail as before. The absence of an adequate social and scientific paradigm is glaring: no secure guidance is offered for a correct understanding of the interaction between the anthroposphere and the geosphere and thus for initiating a new course of sustainable planetary politics. In our view, the wished-for paradigm for knowledge and action cannot be restricted to *ad hoc* reactions, that is to say, to finding immediate responses to the rapid sequence of emergencies of our time—environmental, climatic, biological, economic, etc. As we approach the socio-epistemological tipping point of paradigm change or non-return, the path leading to the future looks more and more like a leap into the void—to reuse the revolutionary image with which Brazilian philosopher Vladimir Safatle has recently described the post-populist emotional conditions for change in today's societies (Safatle 2015).

Among the scientists and intellectuals who share environmental concerns, a growing consensus has emerged that the various facets of the geoanthropological problem cannot be addressed separately, according to rigid disciplinary boundaries that would allocate the investigation of the physical, geological, ecological, social and mental questions to experts who see the world through incommensurable categories. Rather, human history and natural processes need to be reconceived, as they are an entangled human-natural reality in evolution. The alteration of the Earth System, in which human science and culture are inscribed, has received a name: the 'Anthropocene', a geological epoch the

stratigraphic record of which is still under scrutiny by members of the International Stratigraphic Commission (Zalasiewicz 2019). The human-natural history of this change, indeed, is a geoanthropological history that still needs to be written.

Environmental humanists have argued that meaning, ideology, responsibility, and values linked to the dramatic transformations of Earth's environment and geological settings ought to be investigated through multidisciplinary instruments in order to understand and act (Ghosh 2016, Chakrabarty 2021). The Anthropocene debate has raised awareness of the necessity to think of cultural and natural factors together; however, an apt paradigm and research methodology is still a desideratum. From the perspective of historical research, the Anthropocene points to the convergence between geological and anthropological temporalities, suggesting that the Earth environment represents a shared space of coevolution between the anthroposphere and the geosphere. However, aiming at a convergence between the natural sciences, the social sciences and the humanities, this approach entails a twofold intellectual challenge. On the one hand, it has to harmonize different methods: the quantitative and objective ones of the natural sciences, and the interpretative and subjective ones of the humanities. On the other hand, it urges us to rethink the ontological foundations or, better, the material embeddedness of our epistemic history (the history of science, technology and society) and its natural effects. Shortly, we face the problem of operationalizing concepts and results thus far linked to distinct (if not openly antagonistic) viewpoints.

This thematic issue on *Historical Geoanthropology* explores, from various disciplinary and historical perspectives, the critical intersection of the two main spheres of this dynamic unity, the 'anthropos' and the 'geo', through the mediation of the many in-between spheres (Rispoli 2022). The concept of geoanthropology that is at the center of our investigation stems from a recently launched research context that has originated from the Anthropocene debate and brings it forward to a new level of scientific engagement with human geological agency. Specifically, geoanthropology is a novel domain of research developed by Jürgen Renn, founding Director of the Max Planck Institute of Geoanthropology in Jena, and his team to study the challenges of the Anthropocene as the result of the accumulated impact of an industrialized humanity (Renn and Rosol 2020). The history of science and technology seems to have a pivotal role in

this framework. Relative to the contribution of the humanities to geoanthropology, this emerging science seeks to merge an updated version of Earth System research (the *geo*, including the *bio*) with cultural theories and histories of socio-material, energetic, and informational flows (the *anthropos*) (Renn 2022). Therefore, geoanthropology should "explore on a more fundamental level than in the past the environmental, social, economic, political, and epistemic dynamics of the interactions between human actors and the Earth System from historical, evolutionary and systemic perspectives" (Renn 2020, p. 375). In this manner, geoanthropology is conceived of as an all-encompassing science that shifts between the analysis of specific scientific and technological micro-spheres and the planetary macro-sphere. In addressing this multiple scale of description, diverse disciplinary approaches—such as complexity and Earth System Science, biosphere studies, political ecology and Anthropocene research, history of science, technologies, and economic knowledge systems, environmental humanities, human geography, cultural studies, history of economies and cultural anthropology—are brought together.

The long essay that opens this collection, Pietro Daniel Omodeo's *Geopraxis: A Concept for the Anthropocene*, engages with the notoriously important yet slippery issue of the Anthropocene in terms of what the author suggests we call 'geopraxis', a more politicized approach of Gramscian provenance. He also argues that the Anthropocene question should be approached as a combination of scientific and extra-scientific factors involving thus both historical epistemology and a more *political* epistemology (in line with Omodeo 2019). The Anthropocene is not so simple as a Promethean encounter between 'Man' and 'Nature' via 'Technology' (in capital letters as hypostatized essences), since it is *historically* and *culturally* mediated by various levels of knowledge and practice. Following an insight of Nancy Fraser's and other critical thinkers, the author is committed to the emancipatory potential of science and technology if decoupled from the interests and goals of capital. In this respect, he criticizes

the account proposed by geologist Peter Haff, in which the 'technosphere' is considered to be an autonomous entity because, from an ideological point of view, the technosphere concept performs an anesthetizing and depoliticizing task analogous to that performed in other contexts by religion. Other philosophical approaches and concepts are considered, as well, comprising those of cosmotechnics (by Hui) and cosmopolitics (by Stengers). They have in common with the technosphere hypostasis an alienating conception of technology and technological developments which leave aside human agency. By contrast, the idea of geopraxis connects the geological agency of contemporary technoscientific societies with the political problem of collective action. A historical and open conception of humankind, understood as a de-essentialized construction emerging from historical decisions, struggles and self-determination, is here defended as a theoretical tenet of geoanthropology.

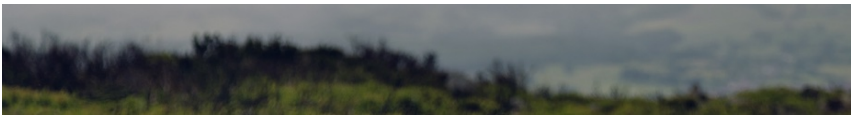
In her contribution, *The Evolution of the Anthroposphere: Historicizing Geoanthropology*, Giulia Rispoli frames geoanthropology as a novel interdisciplinary approach that can help overcome tensions between the sciences and the humanities. In order to do so, she proposes two examples of geoanthropological investigation. The first one illustrates the collective publication *Anthropogenic Markers* (Rosol and Rispoli 2022), which demonstrates some of the historical contexts, epistemic settings, and conceptual contributions of Anthropocene geology, and explores ways of combining the anthroposphere and the geosphere without losing sight of the different local and political contexts. The second example introduces the concept of "epistemic evolution", which is crucial to understanding geoanthropology from a historical perspective, and combines it with the notion of the 'noosphere', particularly in the elaboration provided by Russian geochemist Vladimir Vernadsky. The noosphere is described as a new phase of biosphere evolution, in which humans have become aware of their ability to reshape the Earth, especially through the invention of modern technologies. In this respect, the noosphere is characterized by the emergence of a

new awareness that integrates cultural and geological forms of agency in their epistemic and co-evolutionary aspects. The noosphere appears as a global process oriented towards understanding the world as an integrated system, which is a precondition for any attempt to rebalance the role of humanity in the Earth System.

Thomas Turnbull then inaugurates the more specifically historical part of our thematic issue. In *Mississippi: Working River*, he takes into consideration the transformative forces of water and human labour in relation to a river that has long attracted attempts to tinker with the productivity that can be derived from the inherent energies of water flows and their canalization. Turnbull here considers several such attempts to derive work from the river and its constituent basin. Geographer Élisée Reclus's concept of a 'working river' is expanded upon in a series of reflections and direct observations, some of which were made from a canoe. In Reclus's lifetime, the river's sedimentary processes continuously worked to extend North America's landmass into the Gulf of Mexico. Today, this landmass is eroding into the sea at an increasing rate. Something has happened to the way the river works. To explore the question of where this work has gone, Turnbull considers the Mississippi as an energetic system, in which nothing is lost but entropy increases. A single drop of water is followed as it makes its way from the Appalachia to the Gulf of Mexico, as it contributes to the sedimentary record of both natural and human history. Such flows were first altered by European hydrological beliefs. Later, the misguided visions of settlers created today's cyborg watershed (a system that is part natural, part machine) and the industrial heartland of the US during its rise to globalism. This journey ends beneath the Gulf, amid subterranean salt domes, where ancient geological processes of hydrocarbon formation have come to shape the region's fossil-fuelled present.

In *Historical Geoanthropology in Venice*, Omodeo and Sebastiano Trevisani deal with the natural-artificial reality of the Lagoon of Venice. They look at it as a paradigmatic case of historical geoanthropology, which can contribute to a deeper understanding of the stakes of the Anthropocene hypothesis. The authors discuss the low fuzzy signal of anthropogenic geoagency, which has thus far escaped the scrutiny of the stratigraphic community. Indeed, Anthropocene stratigraphers are working towards the validation of the Anthropocene hypothesis by detecting specific markers which correspond to high-intensity signal

peaks at an atomic or molecular level. By contrast, the geoanthropological history of Venice's hydromorphology bears witness to long-lasting geoanthropological transformations of water and soil of great relevance, including at a symbolic level (on which see Baldacci et al., eds, 2022). Venice's environment has been reworked by humans and the elements over millennia to such an extent that it is impossible to separate human agency from natural causes anymore. Omodeo and Trevisani here discuss the entanglement of environmental factors, socio-economic drivers, and cultural-political elements of Venice as a paradigm to thinking of geoanthropological processes in general.



In *Transformation and Persistence of the Basin-Valley of Mexico in the 16th and 17th Centuries*, Edgar Omar Rodríguez Camarena presents the case of the hydrogeological management and transformation of the water basins of Mexico City as an example of the dramatic anthropogenic changes that the environment has undergone in the last centuries and as an early instance of the changes produced in the Anthropocene period. It shows how the Iberian colonization impacted, and eventually transformed, the local lacustrine environments. It argues that such transformations were also the result of a clash between different ways of living and understanding the city, the lakes and their relationship, which characterized the natives and the European colonizers. This was at the origin of different visions and practices of water management. The essay suggests that in the sixteenth century the indigenous ideas of a city coexisting with the lacustrine environment, as well as the adoption of traditional techniques of water regulation, still prevailed. At the turn of the century, the urban views of the European settlers—who planned to drain the waters of the lakes in order to protect the city from flooding—became prevalent. Still, their interventions were initially quite limited. The transformation of the basin into a valley was more similar to a geological process than to a simple technical application of political decisions. Therefore, it occurred much slower than the urban elites had wished.

While this still represented an issue for city life, it allowed the indigenous way of life, linked to the lakes, to persist and continue for long.

Matteo Pasquinelli's contribution to historical geoanthropology connects the geographic spaces of the Anthropocene with the epistemological and cybernetic mechanisms of the technosphere. His essay, *Labour, Energy, and Information as Historical Configurations: Notes for a Political Metrology of the Anthropocene*, draws from the ideas of the economic historian Witold Kula on political metrology to reflect on the role that abstraction plays in the organization, maintenance and unfolding of global Anthropocene societies. While the political relevance of systems of measurement relative to climate change and the environment are clearly visible (see for instance the IPCC reports), the function of the metrics of energy and information flows for the manipulation and control of the production and the reproduction of our societies is less evident. Yet, these constitute the fundamental knowledge-power asset of present-day technoscientific societies. Pasquinelli targets the key problem of the material control of labour, energy and information through the metrics of extractivist and cybernetic capitalism—or 'carbonsylicon capitalism' (cf. Pasquinelli 2017). Against machinic alienation and the ideology of technological automatism, labour reemerges as the real but too often invisible sources of world transformation. Its liberation in the name of eco-social justice will depend on our capacity to comprehend and overturn forms of technological alienation that are at once material and cognitive.

This thematic issue also comprises the review of three books, which have in common the study of the Anthropocene from perspectives that emphasize its cultural component. Jürgen Renn's *The Evolution of Knowledge* (2020) (reviewed by Giovanni Fava) can be seen as the foundation stone of geoanthropology as a novel discipline. It is particularly valuable for our historical approach because it stresses the epistemic dimension of the Anthropocene planet, that is, the inscription of technoscientific practices in geology, as well as the labour dimension (the 'ergosphere') of the material construction and transformation of the world. According to this view, the history of science and labour are fundamental components of the Earth System. Andreas Malm's *The Progress of this Storm: Nature and Society in a Warming World* (2018) and John Bellamy Foster's *Capitalism in the Anthropocene* (2022) (reviewed by Lukas Meisner and Pietro Daniel Omodeo, respectively) highlight the socio-economical component of the

Anthropocene. They discuss interconnected problems of ecological and labour justice. According to these authors' political-epistemological agenda, the criticism of capitalism and the struggles for environmental justice are connected by necessity.

The inscription of human subjectivity and praxis in the geosphere depends on unique conditions and contingent cultural developments. Our natural and societal past is continued by our present; in many ways, it anticipates the future. But the outcome is not determined; the end of the story – to use a metaphor by Serenella Iovino (2016) – has not been written, yet. The capacity and possibility of deciding and shaping the living artefact of planet Earth very much depends on knowledge. Indeed, more knowledge, natural and historical, is needed, in order to position ourselves, objectively and subjectively, in the Anthropocene. Our leverage is history, which is a human and natural reality but also, from an epistemological viewpoint, memory, that is, a way of deciphering and interpreting the past in the light of present concerns. History shows path-dependencies that could pass unperceived as apparently neutral, natural or necessary, and reveals the degrees of freedom for action. The Archimedean point is, of course, humankind. While we should avoid objectifying it, which would constitute an undue essentialization or reification (quo species), its comprehension, the γνῶθι σαυτόν, is among the oldest and most controversial questions of philosophy. Our path to comprehend it is by historical means; the subject of the inquiry is at once spiritual and material. Historical geoanthroplogy can be seen as a redundant expression, because both the Earth and humankind are intrinsically temporal (actually, they share the same story!). Nonetheless, we place this pleonasm front and center to emphasize historicity as the crucial dimension for the geoanthropology to come. Our socio-cultural studies go beyond environmental history and environmental philosophy because they aim at a scientific paradigm that includes historicity and agency as fundamental concepts for a theoretical understanding of the Anthropocene. Starting from these premises, this thematic issue looks at the unfolding of planetary human praxis.

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