

Geodesign, or, It Matters What Earths Make Worlds

It matters what matters we use to think other matters with; it matters what stories we tell to tell other stories with; it matters what knots knot knots, what thoughts think thoughts, what descriptions describe descriptions, what ties tie ties. It matters what stories make worlds, what worlds make stories.

— Donna J. Haraway, *Staying with the Trouble*

1. Jack Dangermond, “GIS and Geodesign in Transition,” lecture, Harvard Graduate School of Design, 2012, <https://www.youtube.com/watch?v=4UzbYmX1zNA>. In 2006, Dangermond delivered a lecture at Harvard University at the opening of the Center for Geographical Analysis (CGA), which was celebrated as a return of geography to Harvard.

In 2012, Jack Dangermond, cofounder of the Environmental Systems Research Institute (Esri), the leading geographic information systems (GIS) software company, delivered a lecture titled “GIS and Geodesign in Transition” at the Harvard Graduate School of Design.¹ The event was a celebration of GIS’s emergence from the Harvard Laboratory for Computer Graphics, which had been founded by Howard Fisher, in 1965, and whose early contributors included Dangermond himself. “You haven’t seen anything yet,” declared Dangermond as he speculated on the prospective expansion of GIS – “the Facebook of geography” – into “geodesign,” a multidisciplinary design field that would use 3D GIS geospatial information, value-based information, and parametric tools to make better-informed design decisions. In the conversation that followed the lecture, Dangermond made a series of comments through which the potential mutual interests of the Esri CEO and the Ivy League school might be inferred. “I have 350,000 corporations that use my software,” Dangermond said, adding that “developers build things all the time. . . . They don’t ask designers or planners,” later noting, “I have clients who want to use more interesting geodesign tools.” The institutional hosts – then GSD Dean Mohsen Mostafavi and landscape chair Charles Waldheim – appeared to be walking a tightrope, softly courting the billionaire 1969 GSD alumnus while seemingly suspicious of how an applied program that models efficient decisions for business professionals might find grounds within the school’s design ethos and the contemporary attempts, as Mostafavi said, “to bring geography back to the GSD.”

2. Neil Smith, "Academic War Over the Field of Geography": The Elimination of Geography at Harvard, 1947–1951," *Annals of the Association of American Geographers* 77, no. 2 (1987): 155–72.

3. Ibid.

4. Rania Ghosn, El Hadi Jazairi, and Stephen Ramos, "Interview with Bruno Latour," *New Geographies* 0 (2008): 122–35.

5. Ryan Perkl, "Geodesign in Practice: Designing a Better World," esri (August 2013), <https://www.esri.com/content/dam/esrisites/sitecore-archive/Files/Pdfs/library/ebooks/geodesign-in-practice.pdf>.

The closing of the Harvard geography department, in 1948, and the continued contestation of its closure into the late 1950s, was "a terrible blow . . . to American geography . . . and one from which it has never completely recovered," said geographer Jean Gottmann, author of *Megalopolis: The Urbanized Northeastern Seaboard of the United States*.² The blow was particularly mythological because the Harvard president had cast doubt on the appropriateness of human geography as a university subject after a committee report was unable to clearly define the subject or determine its boundaries in relationship to other disciplines.³ The GSD would become a center for spatial analysis and "theoretical geography" in the 1970s. Beginning in 2006, the school fostered a vision for the return of critical geographic theory and representation to the design traditions, articulated in part by the journal *New Geographies* and by symposia and new faculty hires, including urban sociologist Neil Brenner. With colleagues from the GSD Doctor of Design program – Gareth Doherty, El Hadi Jazairi, Antonio Petrov, Stephen Ramos, Neyran Turan – we laid some of the intellectual groundwork for the expanded spatial agenda of *New Geographies*, linking attributes and scales understood to be either separate from each other or external to the design disciplines, thus opening a range of formal and political repertoires for architecture. In our interview with Bruno Latour for the inaugural issue of the journal, the name of our practice, Design Earth, with El Hadi Jazairi, was born when Latour said that redesigning the Earth was the big question for architecture.⁴ Our work at Design Earth has since built on the foundational idea that *geography* – to draw the Earth – is critical for architecture in order to address historical situations that are shaped by the climate crisis.

Over the past decade, the imperative to respond to the deepening climate crisis has put pressures on design practices and pedagogies to transform their engagement with the Earth. In this respect, *geodesign* has emerged as a buzzword that stands in for an array of things and values. For example, since 2010, Esri has been organizing annual Geodesign Summit meetings since 2010 to build up the potential users and markets for its platform, which, through geospatial modeling, impact simulations, stakeholder input, and real-time feedback, "facilitate[s] holistic designs and smart decisions."⁵ Architects have also developed a geodesign imaginary to expand their commissions to the whole of the Earth, but not without pervasive undertones of colonial promissory visions, such as Bjarke Ingels Group's Masterplanet, a proposal to

redesign the planet to stop climate change. Geodesign is also having a moment in design institutions. In 2020, the Italian studio Formafantasma launched GEO-Design, a two-year master's course at the Design Academy Eindhoven on developing transdisciplinary projects that investigate design's legacy of "industrial production" and "environmental and social responsibility" through an array of methodologies – material techniques, new media formats, environmental discourse – to "propose transformative interventions through design and its material, technical, social, and discursive possibilities" through which designers establish an ethos of practice.⁶

Amid all of these positions, and driven by my own professional curiosity to situate a practice at the intersection of design and geography, in spring 2023, I taught a graduate architecture seminar titled "Geo-Design," which drew together theories and practices on how to make sense of and respond to the transformations of planetary systems.⁷ The class sought to reclaim geodesign from its prevalent contemporary associations with masterplaneteers – totalitarian and computational – to instead situate both "design" and "geo-" (from the Greek *gaia*, for earth) in a genealogy of geophilosophy and speculative fabulation, or more succinctly, "geostory." As Latour put it in his plea for "Agency in the Time of the Anthropocene," "The Earth has become once again . . . an agent of . . . our common geostory."⁸ He continued, "The problem becomes for all of us in philosophy, science or literature, how do we tell such a story"⁹ – and, I would add, how do these geostories make worlds? Hence, the representations of the planet that designers engage with – think, describe, model, picture, tell stories about – matter greatly in how design makes and remakes the world. This shift requires designers to reclaim geodesign from a genealogy of geographic information systems, (planetary) climate models, and positivist geoengineering fixes and to situate it within epistemologies more akin to geophilosophy, where, as Donna Haraway writes, "situated partiality and not universality is the condition to make knowledge claims," and thus to interpret and make worlds.¹⁰ Such situated partiality breeds what Haraway calls speculative fabulation as a "mode of attention, a theory of history, and a practice of worlding" for imagining future-presents that are radically different from the world we inhabit now.¹¹ As soon as we cease to believe in the computer engineer's simulation of the Earth, we open up to a mode of creativity akin to that of the bricoleur, who relies on already available matter and situated knowledges to reassemble and

6. Formafantasma, "GEO-Design," Design Academy Eindhoven, 2020, <https://formafantasma.com/work/geodesign>.

7. I used the hyphen in the class name to draw attention to the fact that engagement with the planet's systems need not manifest in a formal or organizational intervention at the scale of the planet, but only to hold both geo and design in question so as to maintain an openness in potential responses – in scales, sites, lives, and forms – that matter in the design of the Earth. The hyphen is dropped in this essay to speak more explicitly to the geodesign genealogy.

8. Bruno Latour, "Agency in the Time of the Anthropocene," *New Literary History* 45, no. 1 (Winter 2014): 3.

9. Ibid.

10. Donna Haraway, "Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective," *Feminist Studies* 14, no. 3 (1988): 575–99.

11. Donna J. Haraway, *Staying with the Trouble: Making Kin in the Chthulucene* (Durham: Duke University Press, 2016), 230.

12. Eduardo Viveiros de Castro, "On Models and Examples. Engineers and Bricoleurs in the Anthropocene," *Current Anthropology* 60, supplement 20 (August 2019): 296–308.

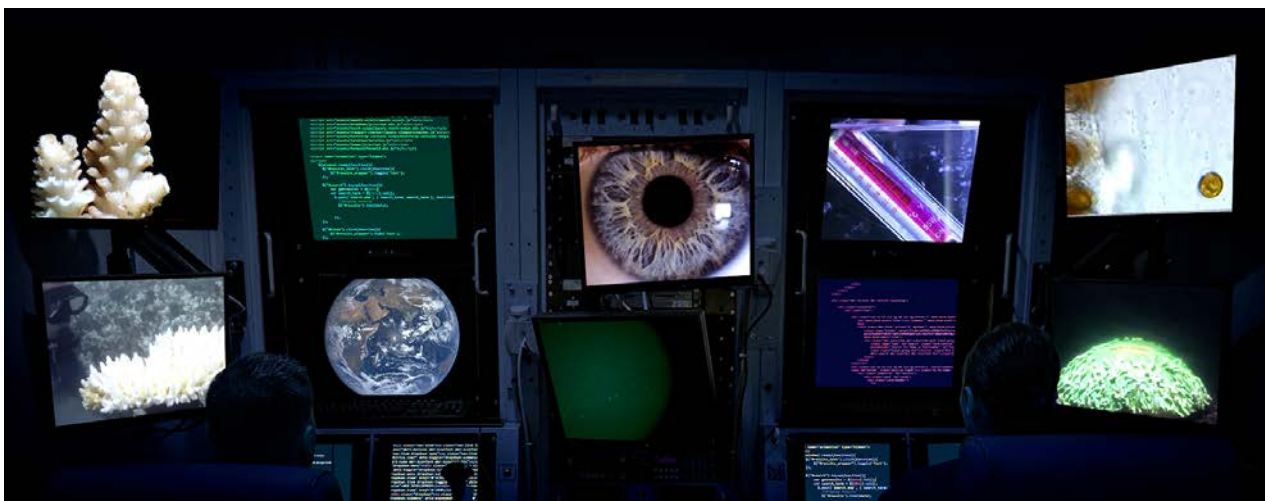
13. William R. Miller, "Introducing Geodesign: The Concept" esri (2012), <https://www.esri.com/content/dam/esrisites/sitecore-archive/Files/Pdfs/library/whitepapers/pdfs/introducing-geodesign.pdf>.

14. Trevor J. Barnes, "The discipline that came in from the cold: American human geography becomes a Cold War social science," *Environment and Planning F* 1 (2022): 145–67.

15. Jeremy W. Crampton, "Governing with Maps: Cartographic Political Economy," in *Mapping: A Critical Introduction to Cartography and GIS* (Hoboken: Wiley-Blackwell, 2010), 62–80. See also Eric Robsky Huntley, "Reserved for the Whole Earth: Forms of Evidence and the Futures of Geographic Inquiry" (PhD diss., University of Kentucky, 2020).

reconstruct thoughts, narratives, and worlds.¹² I conclude this essay with some brief notes from a constellation of earth-thinking and earth-making design practices – critical, decolonial, feminist, and speculative (many of whom would not identify as geodesigners) – whose works do not aim to simulate or SketchUp the future from today's data models, but to world through the cracks of the present crisis the possibilities for another world.

To evoke geodesign today is to situate it in relation to the legacies of the 1960s systems thinkers and environmental designers – figures like Ian McHarg, Carl Steinitz, and Dangermond – who applied spatial data to operate at a regional scale with an interest in designing or planning the future. In publications produced by Esri and its affiliated authors, McHarg is often referred to as one of the "principal founders" in an origin story that situates geodesign in the lineage of the cartographic model, as outlined in *Design with Nature* (1969), with integrated overlaid map layers, each depicting a landscape component such as topography, hydrology, or vegetation, with the goal of analyzing relations and informing regional planning decisions.¹³ Beyond the scalar and visual similitudes with McHarg's work, the history of GIS is inscribed in a longer history of applied scientific quantitative geography and to what today we refer to as Big Data: from the 1854 Broad Street Pump Cholera Outbreak maps of London to the scientific revolution of World War II, along with developments in mathematical rigor, formal modeling, practical intervention, and use of the calculating machine, up to the consecration of GIS with the rise of high-speed, large-scale computing central to Cold War efforts to develop ballistic missiles and encrypted message decoding in the 1950s.¹⁴ In this context, the field of geographic information systems emerged to inventory, manage, analyze, and display geographic data within paradigms of land use and resource management. The phrase "geographic information system" is attributed to Roger Tomlinson, who was commissioned in 1963 by the Canadian Department of Forestry and Rural Development to develop the first computerized GIS, the Canada Geographic Information System, which created a manageable inventory of Canada's natural resources in all 10 provinces and established its national land-use management program.¹⁵ Two years later, with a grant from the Ford Foundation, Fisher founded the Harvard Laboratory for Computer Graphics, whose early members included Dangermond and Steinitz (who later became professor of



GRANDEZA STUDIO and Miguel Rodríguez Casellas, "Teatro Della Terra Alienata," film still, 2019. All images courtesy the author.

16. Carl Steinitz, *A Framework for Geodesign: Changing Geography by Design* (Redlands, California: Esri Press, 2012).

17. Jack Dangermond, "Geographic Knowledge: Our New Infrastructure," *Esri*, 2010, <https://www.esri.com/news/arcnews/winter1011/articles/geographic-knowledge.html>.

18. Quoted in Matthew W. Wilson, "On the criticality of mapping practices: Geodesign as critical GIS?," *Landscape and Urban Planning* 142 (2015): 226–34.

landscape architecture and planning at the GSD for almost three decades). In 1969, the application of geographic information systems to analyze and determine land use and to manage resources led Dangermond to cofound Esri. The company, with its employees and friends, has been a major producer of literature and digital resources that support the term *geodesign*. This includes Steinitz's *A Framework for Geodesign: Changing Geography by Design*,¹⁶ of which Dangermond often says, "Geodesign is geography by design."¹⁷ The specific design agency called up by Esri is the analytical application of computational tools, in particular geographic information sciences, to code geographic attributes in a data format of grid cells, and to analyze and visualize such spatial entries with the aim of optimizing location and resources. This system software operates with a claim of neutrality under the banner of the question, "Can we design a better future?"¹⁸ These short phrases may offer little to disagree with, except maybe around the use of the words themselves: *geography, design, better, future, and we*.

Today's spatial information systems, including Esri, are founded on advances in computation, database management systems, and space geodesy – the measurement, by means of artificial satellites, of the form and dimensions of the Earth and the location of objects on its surface – to model a digital Earth. This planetary model belongs to a history of methodological shifts in earth science from field-based descriptions – such as Alexander von Humboldt's portrait of nature, which assembled synthetic representations, across astronomy, botany, and geology, of his travels and observations in Spanish America – to "mimetic" physical models that sought to reproduce

19. See Peter Galison, *Image and Logic: A Material Culture of Microphysics* (Chicago: The University of Chicago Press, 1997).
20. Paul Edwards, "History of Climate Modeling," *Wiley Interdisciplinary Reviews: Climate Change* 2, no. 1 (2011): 128–39; Paul Edwards, "Representing the Global Atmosphere: Computer Models, Data, and Knowledge about Climate Change," in *Changing the Atmosphere: Expert Knowledge and Environmental Governance*, ed. C. Miller and P. Edwards (Cambridge: MIT Press, 2001), 31–66.
21. See Paul Edwards, *A Vast Machine: Computer Models, Climate Data, and the Politics of Global Warming* (Cambridge: MIT Press, 2013).
22. The aspects of a given technical age are intimately entwined with and constitutive of thought itself, John May argues in *Signal. Image. Architecture*. (New York: Columbia Books on Architecture and the City, 2019).
23. See Holly Jean Buck, *After Geoengineering: Climate Tragedy, Repair, and Restoration* (London: Verso, 2019); Jack Stilgoe, *Experiment Earth: Responsible innovation in geoengineering* (London: Routledge, 2015).
24. The UN Framework Convention on Climate Change (UNFCCC) has significantly failed to decrease Earth's Energy Imbalance over the 30 years since its founding, with carbon dioxide emissions in the atmosphere rising from 360 parts per million (ppm) in 1992 to 421 ppm in 2023.
25. Paul J. Crutzen, "Enhancement by Stratospheric Sulfur Injections: A Contribution to Resolve a Policy Dilemma?" *Climatic Change* 77, no. 3–4 (2006): 216. See also The Royal Society of London, *Geoengineering the Climate: Science, Governance and Uncertainty* (London: Royal Society, 2009), https://royalsociety.org/~media/Royal_Society_Content/policy/publications/2009/8693.pdf.

complex physical phenomena in a laboratory setting – as described by historian of science Peter Galison¹⁹ – to the postwar computer programs that simulate planetary weather patterns over time. The primary methods for calculating global temperature have averaged the readings collected by weather stations, ships and ocean buoys, and satellites. Climate satellites in particular look down on or at the Earth from the viewpoint of the “object(ive)” spacecraft, which orbits in the outermost shells of the Earth’s atmosphere, oblivious to its own entanglements with terrestrial fossil fuel and military politics, and celebrated as an unrivalled source of data unaffected by human practices on the ground.

Today, climate models run the world. Climate is, and has been, primarily assembled through models, historian of science and information Paul Edwards notes, first conceptually, then, in the 19th century, mathematically. Since the 1950s, Earth systems models have simulated the general circulation of the atmosphere and the oceans and their interaction with chemical and biological processes around the globe.²⁰ Edwards argues that such computer-based climate models and global datasets do not merely represent but, in a social and semiotic sense, also *construct* the global atmosphere.²¹ In this sense, the computational climate models are also constitutive of the forms of design responses that the model makes possible.²²

Models make worlds. Global climate models are increasingly being used to forecast a series of warming scenarios and to estimate the impacts of hypothetical climate engineering technologies.²³ In a 2006 essay often credited with granting geoengineering legitimacy on the climate governance agenda, Paul J. Crutzen – a Nobel Laureate in chemistry who also coined the term *Anthropocene* – noted, with alarm, the “grossly unsuccessful” policy efforts to get anthropogenic greenhouse gas emissions under control²⁴ and posited climate engineering as the only “escape route” from global warming, arguing that the only solution is “the deliberate large-scale intervention in the Earth’s climate system.”²⁵ Geoengineering comes to stand in for an Anthropocene Archimedes and his law of the lever, whereby the computational model is a (digital) place where the disembodied data scientist can stand, and from which they move the Earth, with certainty, away from global warming and its consequences. These geoengineering imaginaries – technologies that do not yet exist – are computationally embedded in, and only granted verisimilitude, through climate models.

The motivating question “Can we design a better future?” hinges on who *we* are. There is no objective, detached, universal *we*. The imagination of the globe – a totalizing concept for empire and capital – is inextricably tied to the extractive displacement of matter – humans, plants, animals, molecules, and technologies – allowing a fraction of the global human population to extract and accumulate wealth while creating a massive planetary debt overhang of carbon emissions for all lifeforms. Anticolonial critics have poignantly observed that global forms or systems of knowledge produce an abstraction of the subject’s position – social, environmental, political, racial – in relationship to the uneven burdens of environmental histories and the so-called aspirations and remedies for a “better” future. “[We] think that we can aim to control globality,” writes cultural theorist Gayatri Chakravorty Spivak, however, “the globe is on our computers. It is the logo of the World Bank. No one lives there.”²⁶ Whereas “the globe” is a surface wire mesh – dematerialized, stable, and lifeless – the planetary is at a volumetric, stratified, and inhabited Earth. Moving away from the global and its Eurocentric epistemological totalization, Spivak suggests that *planetaryity* is a desire to “interrupt” or “override” the globe, albeit with humility and alterity, by pointing toward a differentiated political space of (collective) inhabitation.

Echoing Spivak’s critique of the global, Haraway contests the “God trick,” an irresponsible universal “view from nowhere” that pretends to see everywhere and everyone,²⁷ to instead reclaim an embodied and situated material-semiotic form of vision as the heart of a “modest witness,” someone who is not quiet about what she has experienced or seen.²⁸ In her article “Situated Knowledges: The Science Question in Feminism and the Privilege of Partial Perspective,” Haraway troubles the notion of objectivity, pointing out that all “knowledge,” and therefore forms of “truth,” is shaped from a positional perspective – situated in a specific body and environment. The subject’s situatedness inherently determines what is possible to know about an object of research – here, the planet – and thus the forms of responsibility that ultimately lead to “a more adequate, richer, better account of a world, in order to live in it well and in critical, reflexive relation to our own as well as others’ practices of domination and the unequal parts of privilege and oppression that make up all positions.”²⁹

And also violence, because the climate model’s foreclosure of situated knowledge also precludes a future confined to

26. Gayatri Chakravorty Spivak, “Imperative to Re-imagine the Planet,” in *An Aesthetic Education in the Era of Globalization* (Cambridge: Harvard University Press, 2012), 338. See also Elizabeth DeLoughrey, “Satellite Planetaryity and the Ends of the Earth,” *Public Culture* 26, no. 2 (2014): 257–80; Dennis Cosgrove, *Apollo’s Eye: A Cartographic Genealogy of the Earth in the Western Imagination* (Baltimore: Johns Hopkins University Press, 2001).
27. Haraway, “Situated Knowledges,” 575–99.
28. Donna J. Haraway and Thyrza Goodeve, *Modest_Witness@Second_Millennium.FemaleMan@_Meets_OncoMouse™* (New York: Routledge, 1997).
29. Haraway, “Situated Knowledges,” 579.

30. Wendy Hui Kyong Chun, "On Hypo-Real Models or Global Climate Change: A Challenge for the Humanities," *Critical Inquiry* 41, no. 3 (2015): 675–703.
31. *Ibid.*, 697.
32. Bruno Latour, *Down to Earth* (Cambridge: Polity, 2018).
33. Donna J. Haraway, "Carrier Bags for Critical Zones," in *Critical Zones: The Science and Politics of Landing on Earth*, eds. Bruno Latour and Peter Weibel (Karlsruhe: ZKM, 2020), 440.
34. Thomas P. Keating and Nina Williams, "Geophilosophies: towards another sense of the earth," *Subjectivity* 15 (2022): 93–108, 94.
35. Gilles Deleuze and Félix Guattari, *What Is Philosophy?*, trans. Hugh Tomlinson and Graham Burchell (New York: Columbia University Press, 1994), 85.
36. Jennifer Gabrys, "Becoming Planetary," *e-flux Architecture: Accumulation* (October 2018), <https://www.e-flux.com/architecture/accumulation/217051/becoming-planetary/>.

an echo chamber of plausible variations on our current disastrous mode(l) of affairs. To wait for the accuracy of climate models to be verified, notes new media theorist Wendy Hui Kyong Chun, is to "give up on the future by rewriting political problems as ones that science can (dis-) solve."³⁰ How, Chun asks, are we "not to shut down the future – to shape it into what is most statistically probable – but to deal with invisible forces that we cannot entirely know, but need nonetheless to change?"³¹ To refuse a future relegated to probability is to affirm that the present-future is open for rewriting, with the charge for design to make good trouble. To foster change, designers might want to disentangle knowledge from the knot of simulation and probability in favor of a weave-like motion, akin to Haraway's string figures, to think and make with plausible speculation, to world the improbable, however vulnerable and uncertain. In other words, abolish the probable!

For Latour, it is only by developing "alternative descriptions" that design might begin to "touch down" amid the violence of the geographic abstractions that are climate models.³² Foregrounding the significance of (feminist) speculative fabulation, Haraway closes the exhibition-book *Critical Zones: The Science and Politics of Landing on Earth* with a short text, "Carrier Bags for Critical Zones," written in the form of a letter to Latour, the curator and coeditor, and dedicated "In honor of Ursula K. Le Guin's *Always Coming Home*." Beyond White-savior science fiction, Haraway argues that "we live in times of extraordinary Afro-futurist and Indigenous futurist fiction that is changing the shape of sf for everybody. My puzzlement is why you have not turned to science fiction early and often!"³³ For Haraway, sf (for Science Fiction, Speculative Fabulation, String Figures, So Far) is a method of staying with earthly trouble in the midst of spiraling ecological devastation.

To overcome the abstraction of geography in climate models, the task of geodesign might be in part akin to that of geophilosophy. In *What Is Philosophy?*, Gilles Deleuze and Félix Guattari introduced the concept of geophilosophy, which geographers Thomas Keating and Nina Williams read, in part, "as a process of 'earth-thinking' that is sentient to the contingency, rather than universality, of thought."³⁴ In other words, for Deleuze and Guattari, "thinking takes place in the relationship of territory and the earth."³⁵ Design practice, however conscious of the planetary it may be, always inhabits a specific geography – material, technic, and political. Geophilosophy diffracts the planetary, akin to pinching and pulling, cutting



Paulo Tavares, *Trees, Vines, Palms and Other Architectural Monuments*, 2017–2021. Declassified images from the US KH-9 surveillance satellite mission that revealed traces of Xavante settlement sites. The Xavante people of western Amazonia were forcibly evicted by the Brazilian government in the 1960s.

and coring the globe into a set of difference-attentive forms of description that tread carefully between the situated and the planetary. Such design positionality embodies a form of “being planetary as praxis,” in the words of media theorist Jennifer Gabrys, a praxis in which the planetary is configured rather than assumed and given.³⁶ How do designers engage in media and models that assemble such forms of geophilosophy? What is the descriptive machine – formal, pedagogic, speculative, and performative – that makes public such a new picture of the Earth? How do property rights, human rights, and nature rights coexist alongside cosmologies that do not adhere to or respect such distinctions or uphold such values? Some contemporary design practices have mobilized situated geographic knowledge to speculate on other possible worlds and values, and their work might be seen as an invitation for others to do the same.

To begin, a practice of geodesign consists of the re-inscription of earth forms into a territory whose authority has been predicated on previous acts of erasure. In a forensic archaeology of the spectral properties of the pixel, architect Paulo Tavares examines satellite images of Amazonia to unearth and recover the cultural imaginary of pre-Colombian geoglyphs and the “urban heritage” of Indigenous designs. These geoglyphs and designs had been covered by forest vegetation. In the 1970s and ’80s, they were subjected to an extensive project of deforestation and colonization by Brazil’s military dictatorship. The regime’s territorial schemes were based on

the conception that the forest was an empty and homogenous terra nullius/tabula rasa that could be rationally domesticated, planned, and reengineered to “occupy and integrate” it. The forest came to symbolize the outside, the negation of the city, a precivilizational savage space. Recovering this heritage from the abstraction of terra nullius, Tavares’s research asks: How could numerous Waimiri Atroari villages have disappeared without any recognizable archaeological signature on the ground? Through remote-sensing archaeology, Tavares translates satellite data from tropical forest images that index the brightness, greenness, and wetness of the terrain to calculate variations in surface reflexivity, concentrations of photosynthetically active vegetation, and moisture conditions of the soil. Unearthing the optical blindness of mapping, Tavares’s forensic architecture identifies the ruins of villages hitherto erased by the politics of pacification and the shadows of the forest to argue in turn for the cultural heritage standing of these earth forms.³⁷

Another practice of geodesign is to read and expand the anticolonial archive, to account for the salvage and the counterfactual imaginaries, all of which reassert, for WAI Architecture Think Tank, that others worlds are possible.²⁸ In their project Loudreaders, a pan-Caribbean living archive and space for exchange of positions and discourses launched in Puerto Rico, WAI uses poetry and science fiction as pathways to a postcolonial imagination for the planetary wretched, a reference to Frantz Fanon’s approach to the decolonial subject in its capacity to continuously question the colonial condition.³⁹ Here, “loud-reading” is a form of radical pedagogy, where “the only purpose of education is to make new worlds collectively.”⁴⁰ In the tobacco factories of Puerto Rico, workers elected, and paid, one of their own, the *lector*, to read newspapers as well as anticapitalist, feminist, utopian, and anticolonialist literature to them as they rolled cigars.⁴¹ While firmly situated in the Caribbean, and more precisely in the world’s oldest colony, Puerto Rico, Loudreaders does not lose sight of the planet as a political horizon; on the contrary, the oldest colony is ground zero against the subjugation of the world. In their multimedia play “Worldmakers Unite!”, WAI speaks to who remains, and their remains, and the remainder of whatever is left after the rest has been used up or taken away by colonialism. It is precisely because global racialized colonialism was a planetary project of necropolitics – a politics of death, as described by political theorist Achille Mbembe – that “the curriculum

37. Paulo Tavares, “In the Forest Ruins,” *e-flux Architecture*, 2016; Paulo Tavares, “The Political Nature of the Forest: A Botanic Archaeology of Genocide,” in *The Word for World Is Still Forest*, ed. Anne-Sophie Springer and Etienne Turpin (Berlin: K. Verlag, 2017).

38. WAI Architecture Think Tank, POST-NOVIS, 2019, <https://waithinktank.com/Post-Novis>.

39. Frantz Fanon, *The Wretched of the Earth*, trans. Richard Philcox (New York: Grove Press Inc., 1963), 36–37.

40. Introduction to the Syllabus “The Tobacco Intergalactic School (Post-Novis Branch in the Americas),” <https://loudreaders.com/Loudreaders-Introduction>.

41. Cruz Garcia & Nathalie Frankowski, “Loudreading in Post-colonial Landscapes (to the beat of Reggaeton),” *Avery Review* 48 (June 2020), <https://averyreview.com/issues/48/loudreading>.

42. Torbjørn Tumyr Nilsen and Sindre Bangstad, “Thoughts on the Planetary: An interview with Achille Mbembe,” *New Frame*, 2019.

43. Achille Mbembe, “How To Develop A Planetary Consciousness,” *NOEMA* (2022), <https://www.noemamag.com/how-to-develop-a-planetary-consciousness/>.

44. Donna J. Haraway, “A Cyborg Manifesto: Science, Technology, and Socialist-Feminism in the Late Twentieth Century,” in *Simians, Cyborgs and Women: The Reinvention of Nature* (London: Routledge, 1991).

45. Haraway, *Staying with the Trouble*, 56.



WAI Architecture Think Tank, A Room for Ema Yuizarix (Triptych), 2022.

for the planet” evokes “the living world.”⁴² In Mbembe’s quest for a planetary consciousness, and as “parts of the Earth become inhospitable to life in the near future,” geodesign is connected to a new form of geopolitics – a politics of the Earth – that is synonymous with a politics of life.⁴³

Whose life, you may ask? In a challenge to anthropocentrism and human exceptionalism, Haraway introduces hybrid figures, such as the cyborg, an entity that rejects rigid boundaries between human, animal, and machine.⁴⁴ Drawing on the figure of OncoMouse – a patented genic mouse carrying a human gene that causes it to develop breast cancer – Haraway considers a composite figure with the goal of building a technoscientific democracy in which many beings tell stories. In *Staying with the Trouble*, Haraway proposes “Camille Stories,” speculative fabulations that follow five generations of symbiotic human child and monarch butterfly beings along the insects’ migration routes between Mexico and the United States and Canada. As an alternative to what she terms the “prick tale” of the Anthropocene – a tragic story that is coded male, White, straight, and cis, with “self-fulfilling predictions, like the ‘game over, too late’ discourse” – Haraway imagines new forms of storytelling for earthly survival and flourishing: a promiscuous mixture of thinking and becoming-with, of species, of animal, plant, and mineral all inextricably linked in tentacular practices.⁴⁵

Geodesign, not unlike geophilosophy, is conjoined to the speculative. In “Teatro Della Terra Alienata” (Theater of the Alienated Land), an exhibition in the Australian Pavilion at the Milan Triennale, in 2019, the architectural research group Grandeza Studio staged a fictional scenario demanding radical political and aesthetic actions on the rapidly deteriorating Great Barrier Reef (GBR). One of the most visible indicators of the climate crisis is the bleaching of coral reefs across the tropics. In addition to figuring a multispecies assemblage – of tubeworms, bacteria, and mollusks – coral signifies deep time, as its limestone structure grows extremely slowly and its life span is undetermined. Ocean acidification and rising temperatures, as well as the predatory practices of extractivist transnational corporations, are causing a crisis in the symbiotic relations of coral colonies, leading to coral bleaching. In response to the continual thinning of life-worlds, the speculative fiction proposes that, following consecutive droughts and recurrent bleaching events, the United Nations IPCC outsource the management and defense of the GBR and its surrounding territories to the Xenofeminist International Corporation®.⁴⁶ A kaleidoscopic audiovisual collage celebrates the proliferation of a postpatriarchal resignification of concepts such as territory, nature, nation, desire, citizenship, algorithm, and technology. Inspired by the *Xenofeminist Manifesto*, these technologies become the poetic arsenal for a project of emancipation that “construct[s] a coalitional politics, a politics without the infection of purity” and collects across the shared vulnerabilities of “race, ability, economic standing,” and all things and beings “deemed ‘unnatural’ in the face of reigning biological norms.”⁴⁷ The boundary object of the GBR, an assemblage of flesh and stone between the living and nonliving, serves as the figure of entanglement in the face of world devastation and, in the face of severely threatened life-worlds, amplifies desire for mutual dependence and interspecies relations, all brought together in the narrative form of speculative fiction.

In a joyful disregard for the probable, geodesign’s most radical political imagination might be the possibility of a magical, undisciplined belonging in the world. It is a refusal of the cruelty of the present. In *Caliban and the Witch*, Silvia Federici shows that concomitant with the rise of capitalism, the enclosure of land, and the witch-hunt against women, “the world had to be ‘disenchanted’ in order to be dominated.”⁴⁸ In turn, magic, Federici writes, was “an instrument of grassroots resistance to power.”⁴⁹ What geodesign offers is some anticipatory magic, in

46. Amaia Sanchez-Velasco, Gonzalo Valiente Oriol, Jorge Valiente Oriol, and Miguel Rodríguez-Casellas, *Teatro della Terra Alienata: Re-imagining the fate of the Great Barrier Reef* (Madrid: Bartlebooth, 2022).

47. Laboria Cuboniks, *The Xenofeminist Manifesto: A Politics for Alienation* (Brooklyn and London: Verso Books, 2018).

48. Silvia Federici, *Caliban and the Witch: Women, the Body and Primitive Accumulation* (Brooklyn: Autonomedia, 2004), 174.

49. Ibid.

GRANDEZA STUDIO and Miguel Rodríguez Casellas, "Teatro Della Terra Alienata," installation, 2019. "Deforestation - as if my trees were pimples on your ugly face." Photograph: Omar Sartor.



which the future cannot be predicted but can be rehearsed and brought to life, one performance at a time. It matters what Earths fabulate worlds.

So, "Can we (geo)design a better future?" I offer that geophilosophy, when combined with speculation, may resist the obliteration of the world by the spatial normativity of grid cells and liberate earth-thinking from the mimetic model in an avowed refusal to be content with the catastrophe that the future now deems probable for this planet. Here, geodesign is to practice what geophilosophy is to thought: an aesthetics and politics that center the question of "where" thinking and making occur. It matters, then, that "earth-thinking" and "earth-making" are mutually interrelated: that "where" and by "who" earthen claims are made determines ensuing planetary futures. In foregrounding the relation between the situated and the planetary, it perhaps comes as no surprise that the notion of geodesign foregrounds places and reclaims forms of knowledge and practice that the masterplaneteers have sought to destroy. Speculation, then, does not extrapolate from such destructive processes, but rather seeks to reconstruct their histories, and in so doing, opens up experiments on the possibilities of fabulous futures. Such modes of practice, loosely brought together under the geodesign umbrella, center the capacity of geography – writing the Earth – to reflect facets of a world in ruins and to reshape the very understanding of the forces that have shaped the planet to begin to reimagine, if for the time of a story, the possibilities of inhabiting it otherwise. In this respect, it matters what Earths to unmake worlds with.

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