

New Ending.

*All over the world the beautiful red breezes went on blowing hand
 in hand.*

- Anne Carson

ROCK SOLID?

Landscapes of Mineral Impermanence

Guro Sollid

Witnessing stunning sunrises in red, gold, and apricot hues, caused by traveling Sahara sands in the northern hemisphere, the flow of earth's grain is rendered visible. Stone, so often perceived as something inert, and enduring, appears in its most granular form, drifting across borders, escaping any notion of solid boundaries. Yet, from ancient and mythical notions of 'blood rain', to the blackening polar ice caused by carbon dust, these airborne particles often come with omens of warning. A notable lesson was the darkening ash clouds caused by the 2010 Eyjafjallajökull eruption in Iceland. Composed of miniscule particles of rock, mineral crystals and volcanic glass, the far-reaching clouds shrouded large parts of the northern skies and infamously disrupted air traffic way beyond Europe. Once more Iceland is at the center of geologic attention, as current seismic activity in the Reykjanes Peninsula has caused multiple eruptions with ongoing high hazards of earthquakes, sink-holes and gas pollution.

Exploring a multitude of mineral compositions the project presents a speculative map and landscape model, reflecting on the transformative processes and relations distinctive to the contested landscapes of Iceland.

VIBRANT IMPERMANENCE

Drawing on strands of vital materialism, where materiality "tends to horizontalize the relations between humans, biota and abiota"¹ and where stones, humans, and all other material compositions have agency as actants in a pluriverse of assemblages, the project pursues a multidirectional exchange of knowledge between materiality, technology, and imagination. In particular, the work addresses the vibrant impermanence of terrain and our efforts to communicate this vitality within a contemporary architectural practice.

The story of rock is a story of impermanence and “Iceland reminds that stone like water is alive, that stone like water is transient.”² In his book *Stone – An Ecology of the Inhuman* Cohen unravels how stone “densely enfolds nonlinear time [...] suggesting that things emerge multiple times, intensifying and adapting rather than engendering definitive breaks.”³ There is a topological strand underlining this writing, calling attention to transitions in scale and temporality as inherent to the processes, relations, and duration of stone. As a vessel for imagination in mythical animism,⁴ speculative science fiction or technological pioneering, Iceland inspires imaginary landscapes of the deep past and emerging futures. I find, however, that Cohens foremost aspiration is to counter modernity’s disenchantments of stone as an inert, objectified resource, advocating a new ethic sensitivity, alliance, or new companionship with stone:

*Enchantment is estrangement and secular enmeshment, sudden sighting of the world’s dynamism and autonomy, the advent of queered relation. Inhuman agency undermines our fantasies of sovereign relation to environment, a domination that renders nature “out there”, a resource for recreation, consumption, and exploitation.*⁵

Following Cohen’s line of thought, the project ponders: If a landscape is no longer objectified as something out there, nor a steady foundation to walk and build upon, how might we engage in new meaningful assemblages *with* lithic matter? [fig. 1]

Today, the interaction with molten lava seems a common spectacle in Iceland. Ever since the first drama of the eruptions in the Reykjanes region⁶, local Icelanders and visitors alike have made outings to be with erupting volcanoes, creating a particularly fiery social phenomenon. Smartphone images and home videos of friends huddling together alongside the menacing fissure come across as somewhat cozy, yet following the flow of mass tourism in Iceland, the phenomenon has undergone a bizarre Disneyfication.⁷ Hordes of tourists capture and produce seemingly unending amounts of images, cementing photography as the dominant visual preoccupation with the Icelandic landscape. Yet “A volcano is not a mountain like others. Raising a camera to one’s face has effects no one can calculate in advance.”⁸ In Anne Carson’s wondrous poem *Autobiography of Red* the monstrous anti-hero and protagonist Geryon, himself bursting with red igneous energy, offers an intimate and yearning companionship with stone, channeling both monster and human, geology and character.



Figure 1.

Perhaps this alliance and “stone’s capacity to affect bodies and objects”⁹ is bound to the uncertainty, agency and obscure promise in the lithic itself, offering nonhuman assemblages full of vibrancy and vital agency, following Jane Bennett’s line of thought.

*All forces and flows (materialities) are or can become lively, affective, and signaling. And so an affective, speaking human body is not radically different from the affective, signaling nonhumans with which it coexists, hosts, enjoys, serves, consumes, produces, and competes.*¹⁰

Following Carson, Cohen and Bennet, a volcano is indeed an *affective, signaling nonhuman*. From the Latin ‘Monstrum’, the monster is described as a divine omen, or sign. Accordingly, the monstrous has the ability to demonstrate or signal agency, or even to warn and teach. Thus, living with the real effects and hazards of an unforgiving natural force, is a relationship of awe and admiration, love and fear.

MEDIATED LANDSCAPES

Departing from the premise that technology, science and art are strongly connected, and that we approach the phenomena of the world through mediations and devices, one might claim that the technologies available in our time calibrate our view of the world. As such, the project pursues immersive situated practices of mapping, via physical fieldwork and digital fabrications, to evoke new processes of enchantment, and to counter exploitative relations to nature *as resource*. The project explores landscape properties where a virtually pulverized worldview conflates with a contemporary material permeability and investigate tools adept at bridging the gap between dirt, dust and deep geology; LIDAR, Point Cloud Modeling, and AR layering. [fig. 2]

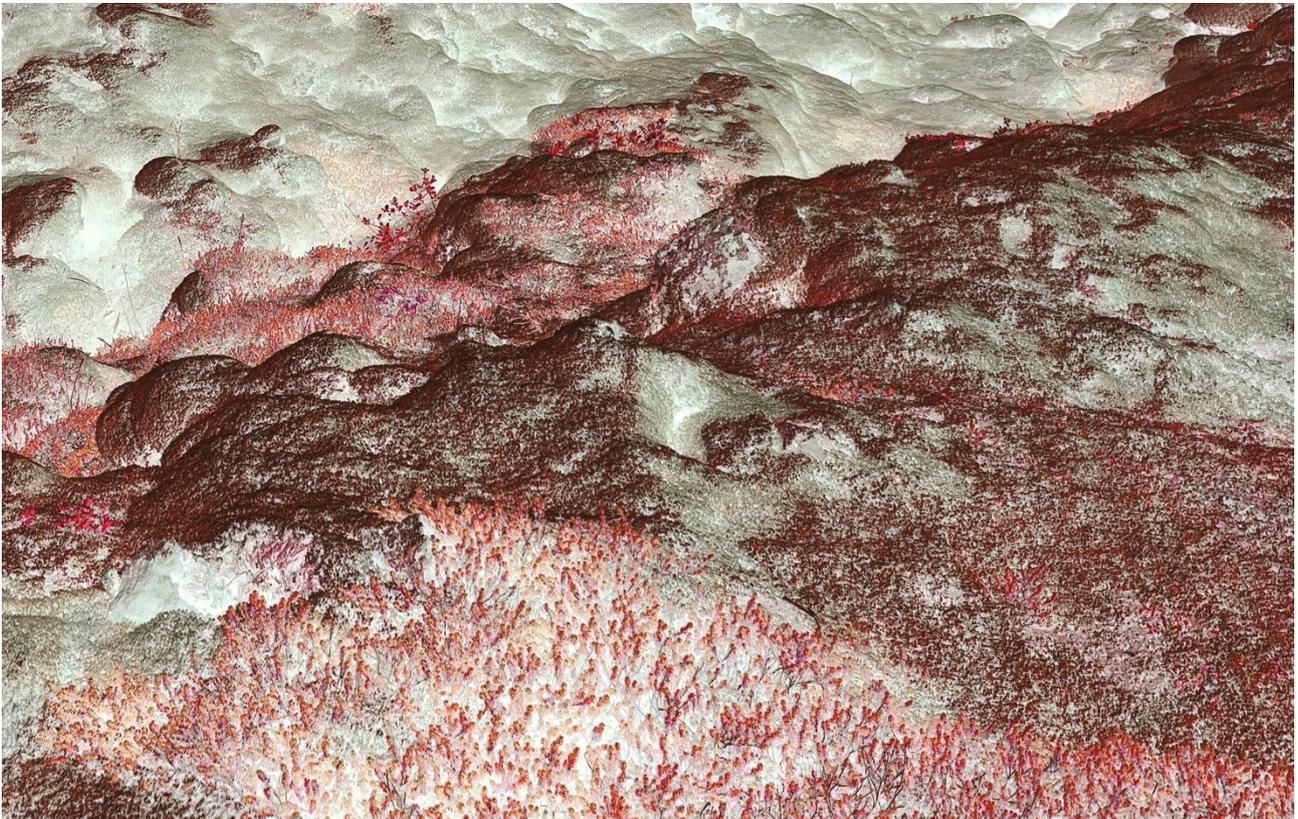


Figure 2.

In point cloud modelling surfaces are displayed as accumulated points that “aggregate to immense numbers”¹¹ and that seem to “exhibit a continuous fluid medium of their own – viscous, gravitational, flowing, blowing”.¹² The surface is dissolved, pulverized, and porous, transformed to dust, pixels, data points. Small particles, yet in their sum large as mountain ranges or vast like ocean currents [fig. 3]. The ephemeral point cloud serves perhaps as an obvious metaphor for the dusty, and

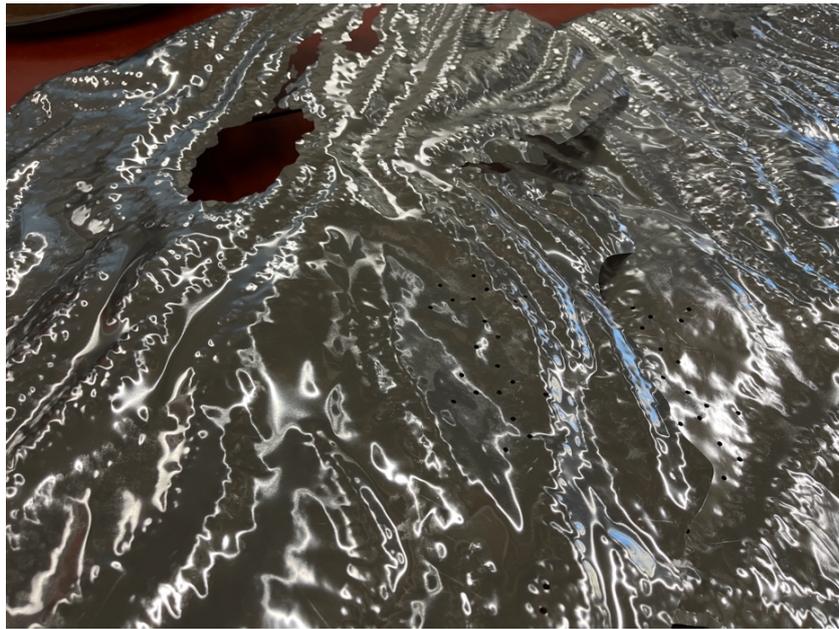
porous texture of the basaltic plains in Iceland, rather the project explores movement and duration - the topological understanding of landscape terraforming. Protecting the local infrastructure, Icelandic authorities combat the disruptive lava flow by constructing retaining walls, dikes and ramparts to intersect the moving of molten rock, all-the-while shaping new land, real-time as it erupts.



Figure 3.

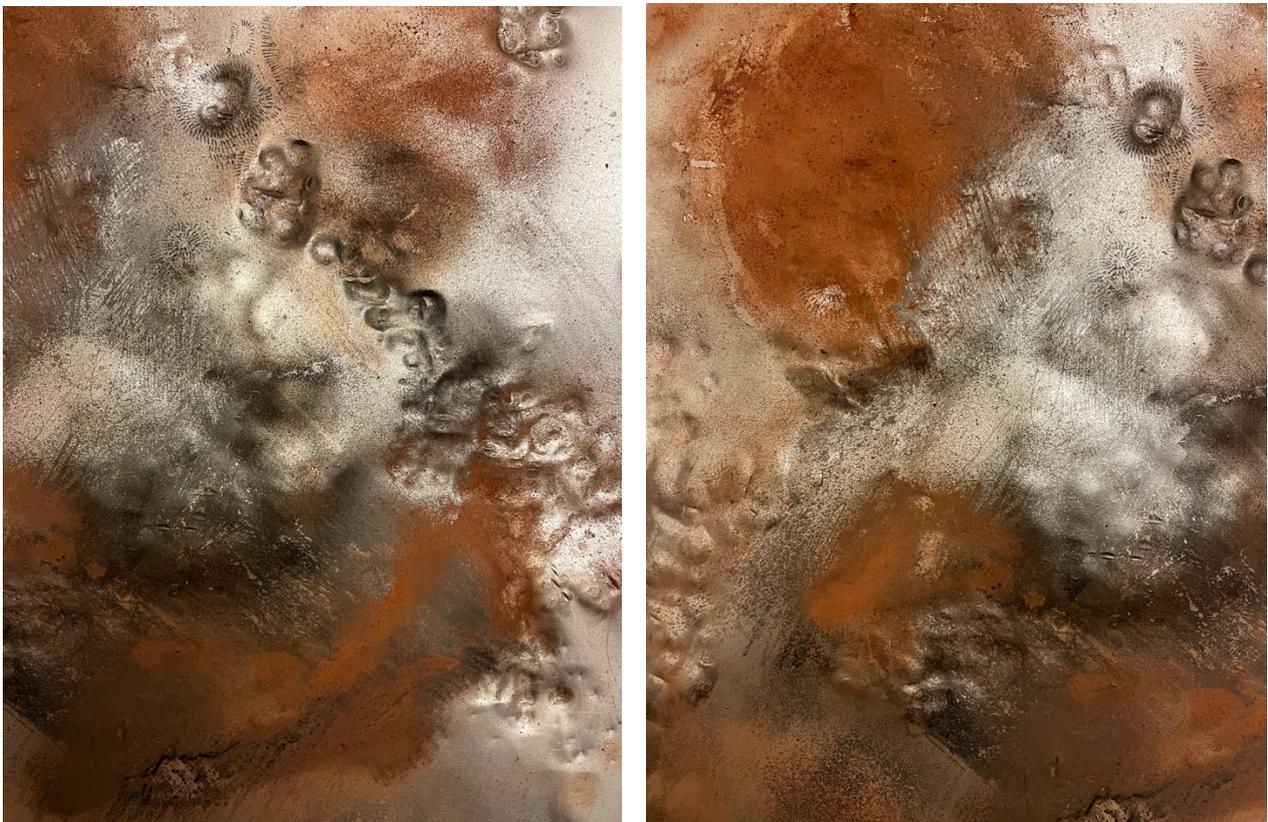
The interest in pulverized properties and aesthetics is combined with an attention towards topographical surfaces. The LIDAR scan technique, which is closely related to photographic media, can capture only surfaces. Movement and depth have surely moved the LIDAR scan into a 3D modelled space, yet the model is still bound to a surface, however permeable. A strong inspiration for this project is found in the beautiful albeit strangely peculiar 3D models of *Fagradals Volcanic Eruptions* produced by the Natural Science Institute of Iceland (NSII) as found on their Sketchfab site¹³ - a meticulous series of landscape models, portraying the eruptions, chronologically ordered throughout 2021. The landscapes appear thin and sheet-like, as the volcanic images are draped or mapped¹⁴ onto the digital model, portraying a fascinating gap between the digital surface and the disruptive

event itself. A more speculative approach to local terraforming is proposed by Icelandic architect Arnhildur Palmadottir and s.ap architects¹⁵, suggesting to directly channel molten lava from the Icelandic underground to produce building material (and whole cities) from the liquefied basalt. Engaging in the much-needed critical debate of the building industry's scarce resources and heavy impact on CO2 emissions, their 'Lavaforming Concept' deploys science fiction, video games and thought-provoking speculation to imagine future-facing sustainable construction.



Figures 4, 5.

The combined attention to these somewhat contrasting focal points; the ephemeral point cloud and the continuous surface, digital technology and vital matter, is expressed in the model's materiality and morphology; Aluminum sheets are slightly 'draped' to convey a concave/convex topography [fig. 4, 5]. Mineral pigment from Iceland, *Snäffellsjökul Red*, adds a soft obscurity to an otherwise continuous material flow [fig. 6, 7]. Experiments with LIDAR scan and Augmented Reality (AR) loop digital and physical landscapes. Altogether the speculative landscape model is a laminar of surface thin mediations intertwining digital and physical form, exploring a multitude of mineral compositions and their transformative relations.



Figures 6,7.

GEOTHERMAL ENERGY

The landscape model is informed by the topography of Hellisheidi, loosely modeled from various digital maps and LIDAR captures from on-site immersive fieldwork. Situated some 30 km out of Reykjavik, the basaltic plains also host Hellisheidi Geothermal Power Plant, a focal point for reflections on the harvesting of geothermal energy - that afford renewable energy for commercially

attractive aluminium smelters- alongside the deep infrastructure needed for revolutionary carbon sequestration.

In Iceland, the industry accounts for 82% of electricity consumption, and a large part of it goes to aluminum production. The advantage, perhaps, is that all the electricity comes from renewable energy sources, 68% from hydropower and 32% from geothermal energy. As such it is more 'climate-friendly' to produce aluminum in Iceland than elsewhere in the world. Global production emits an average of 8 tons of CO₂e per ton of aluminum produced, while the figure in Iceland is 'only' 1.64 tons of CO₂ per ton produced. The challenge is that a large part of the emissions from the industry are process emissions, they come from the production process itself and not just from energy consumption.¹⁶ This calls for further technological development in efforts to reduce CO₂ emissions, as is the case of proper technofix Carbfix, where carbon infused water (sparkling water) is injected into the underground to aid and accelerate underground calcification in the cavities of porous basalt, to bind CO₂ in lithic form, or as their slogan intriguingly assures: 'We turn CO₂ to stone'¹⁷.

Whether to protect infrastructure, or to harvest the immense energy of the seismic activity, terraforming structures intertwine with grand natural forces, stimulating both speculative ideas and pragmatic technological development. Often the one and the other go hand in hand.

In recent efforts to reconcile with our landscapes, rich in violent forces and monstrous compositions, and to further counter modernity's imaginative control over nature, the project investigates new modes of knowledge production. Drawing out various relationships of landscape mediations, summoning both the calculative and the experienced, the project affords an explicitly topological promise of moving grounds, where any sense of permanence is overshadowed by a dynamic and joint composing and recomposing, an open-ended rewriting of landscapes properties through its minuscule particles of animated rock, dust, data, mineral. The craggy, crusty, and porous topography of Iceland's basaltic plains are thus explored alongside fluid terraforming volcanic activity, subterranean technological pioneering, and ambiguous social alliances with volcanoes, stone and other minerals.

Notes

- ¹ Jane Bennett (2010) *Vibrant Matter. A Political Ecology of Things*, Duke University Press. p 112
- ² Cohen, Jeffrey Jerome (2015) *Stone. An Ecology of the Inhuman*, University of Minnesota Press p.256
- ³ Cohen, Jeffrey Jerome (2015) *Stone. An Ecology of the Inhuman*, University of Minnesota Press p.41
- ⁴ In Iceland the Nordic folklore of the Huldufolk is strong. Rocks and mountains believed to be where the Huldufolk resides, are respected by the public.
- ⁵ Cohen Jeffrey Jerome (2015) *Stone. An Ecology of the Inhuman*, University of Minnesota Press p.9
- ⁶ The first eruption in the region was the Fagradalsfjall eruption, March 19th 2021
- ⁷ <https://www.theguardian.com/commentisfree/2024/jan/24/iceland-volcanoes-eruptions-tourists-damage-nature>, accessed 22.12.2025
- ⁸ Carson, Anne (1998) *Autobiography of Red, Cape Poetry*, Jonathan Cape. p
- ⁹ Jeffrey Jerome Cohen (2015) *Stone. An Ecology of the Inhuman*, University of Minnesota Press. p. 161
- ¹⁰ Jane Bennett (2010) *Vibrant Matter. A Political Ecology of Things*, Duke University Press p. 117
- ¹¹ Katrin Klingan, Ashkan Sepahvand, Christoph Rosol, Bernd M. Scherer (2015) *Textures of the Anthropocene: Grain Vapor Ray*, The MIT Press p. 7
- ¹² Katrin Klingan, Ashkan Sepahvand, Christoph Rosol, Bernd M. Scherer (2015) *Textures of the Anthropocene: Grain Vapor Ray*, The MIT Press p. 7
- ¹³ <https://sketchfab.com/naturufraedistofnun>, accessed 11.01.2026
- ¹⁴ Etymologically, the word 'Map' derives from the Latin mappa "napkin, cloth" on which maps were originally drawn.
- ¹⁵ Lavadottir and s.ap architects presented Iceland at the 2025 Venice Biennale of Architecture. See more on the project: <https://www.dezeen.com/2022/05/09/lava-cities-arnhildur-palmaidottir-design-march/>, accessed 11.01.2026
- ¹⁶ <https://www.iea.org/countries/iceland>
- ¹⁷ <https://www.carbfix.com/>, accessed 11.01.2026

Bibliography

- Bennett, Jane. 2010. *Vibrant Matter: A Political Ecology of Things*. Durham, NC: Duke University Press.
- Carson, Anne. 1999. *Autobiography of Red: a Novel in Verse*. Cape Poetry, Jonathan Cape.
- Cohen, Jeffrey Jerome. 2015. *Stone: An Ecology of the Inhuman*. Minneapolis: University of Minnesota Press.
- Klingan, Katrin, Ashkan Sepahvand, Christoph Rosol, and Bernd M. Scherer, eds. 2015. *Textures of the Anthropocene: Grain, Vapor, Ray*. Cambridge, MA: MIT Press.

BIO:

Guro Sollid investigates architectural mediations and new territories between topographical and topological mapping, recognizing architectural drawing as an essential tool for creative reflection. Explores overlapping narratives in past, present, and emerging landscapes and the historic interdependency of the natural/artificial divide, considering how concepts of nature repeatedly change the thinking, design, and realisation of architecture. Currently pursuing the artistic research project 'Monstrous Landscapes', exploring the Monstrous as a creative strategy to negotiate landscapes between categories.