CHAPTER 20

Imagining Godzilla
An Art Research Network Platform

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Abstract

This chapter introduces Imagining Godzilla, an experimental, mobile, artistic and art-science research and network platform with a focus on investigating the environmental challenges facing the Baltic Sea and its surroundings. The first section provides the reader with factual information about the project and its aims, as well as the current biophysical condition and political situation of the Baltic Sea. The first edition of the residency was held in Helsinki during August 2019 in collaboration with the Bioart Society. The long-term aim is to develop an international network of artist residencies and marine science research centres around the coast of the Baltic Sea, allowing fundamental collaboration and cooperation between artists and scientists, and disseminating results, findings, and artworks to the public.

How to cite this book chapter:
Best, A. 2021. 'Imagining Godzilla: An Art Research Network Platform'. In *Situating Sustainability: A Handbook of Contexts and Concepts*, edited by C. P. Krieg and R. Toivanen, 293–330. Helsinki: Helsinki University Press. DOI: https://doi.org/10.33134/HUP-14-20.

Figure 20.1: Godzilla in Helsinki Harbour, 22 August 2019. Drone photo: Tivon Rice.

The Imagining Godzilla network platform was conceived and run by artist-researchers Merja Puustinen and Andy Best. It is based on *Godzilla*, a Polynesian-style sailing catamaran designed by James Wharram. Wharram studied the ancient Polynesian sailing canoes and based his designs on their timeless principles. In the 1950s, he was the first person (together with two companions) to sail a catamaran west to east across the North Atlantic. *Godzilla's* unique pedigree and aesthetics create an environment conducive to artistic thinking and research, in contrast to a conventional scientific research ship or a traditional artistic residency on land. Its shallow draft, stable platform, and wind power allow artists and researchers close physical and mental access to the sea and its coastline. The simple no-fuss interior and blend of Western and Polynesian aesthetics provide an environment well-suited to creative artistic thinking.

With more than 20 years' experience sailing in the Baltic Sea, Best and Puustinen have become increasingly concerned with the levels of pollution, biodiversity loss, and density of shipping

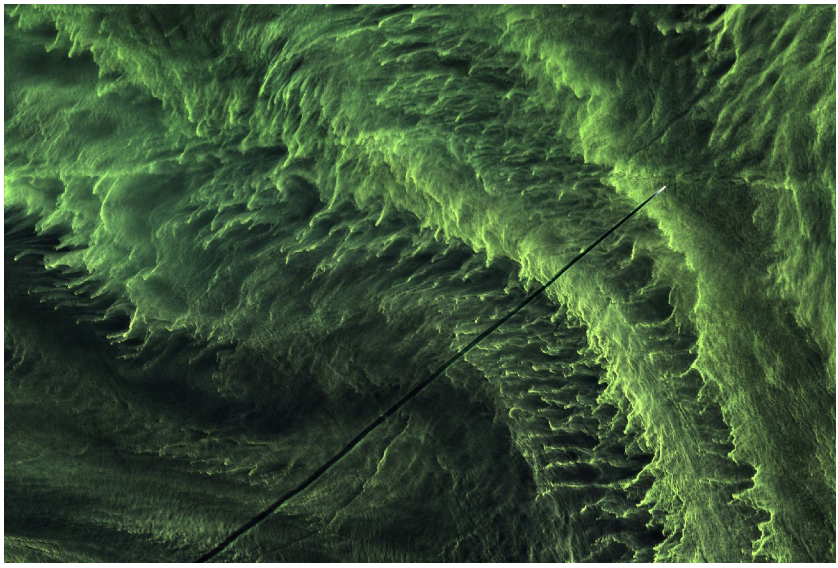

Figure 20.2: A ship cuts through algae blooms in the northern section of the Baltic Sea, 28 July 2019. Image sourced from EU Copernicus Sentinel-2 satellite. Image: Andy Best.

apparent in the area. Having sailed widely over many areas of the Baltic Sea, Best and Puustinen have observed how cyanobacteria algae blooms affect huge areas, often well out of sight of land. Imagining Godzilla is an attempt to use artistic means to research and draw public attention to these phenomena, as well as giving artists and researchers the opportunity to experience and get up close to the sea in general.

The Baltic Sea is the second-largest inland sea in the world – the largest being Hudson Bay in North America. The Baltic Sea is also the largest brackish sea area in the world. Inflow of fresh saline water from the North Sea and Atlantic is extremely limited due to the narrow, shallow channel connecting to the Baltic Sea via the Kattegat between Denmark and Sweden. The Baltic Sea is also fed by rivers from a large catchment area four times the size of the sea itself (Attila 2019). Many of the rivers discharging into the sea flow through large industrial areas (Neva—St. Petersburg; Vistula and Motława—Gdańsk; Daugava—Riga). For example,

Figure 20.3: Tanker in the port of Klaipėda discharging water directly into the harbour, 27 July 2019. Photo: Andy Best.

the River Vistula drains 60 percent of Poland's land area. Many rivers in Finland, Sweden, and Denmark run through rich agricultural and forestry regions and, as a result large amounts, of organic material and fertilizer run-off are deposited into the sea. All these factors make the Baltic one of the most polluted seas in the world.

The Baltic Sea is heavily used by commercial shipping, particularly by tankers and container ships coming from and heading to ports in Russia, as well as other major harbours such as Gdańsk, Klaipėda, Liepāja, Ventspils, Tallinn, Stockholm, and Helsinki. The Baltic also plays host to large numbers of cruise ships, each with the pollution footprint of a small town. In addition, there are many commercial ferries on regular routes connecting cities around the coast of the sea. During the summer months, the coastal areas of the Baltic attract large numbers of tourists and pleasure boaters, particularly in the Stockholm archipelago and the Finnish Archipelago Sea areas, as well as along the northern Polish and German coasts. All these factors lead to increased pollution and pressure on the sea and its wildlife.

One of the major problems facing the Baltic is eutrophication, the growth of algae in the water due to an imbalance of nutrients,

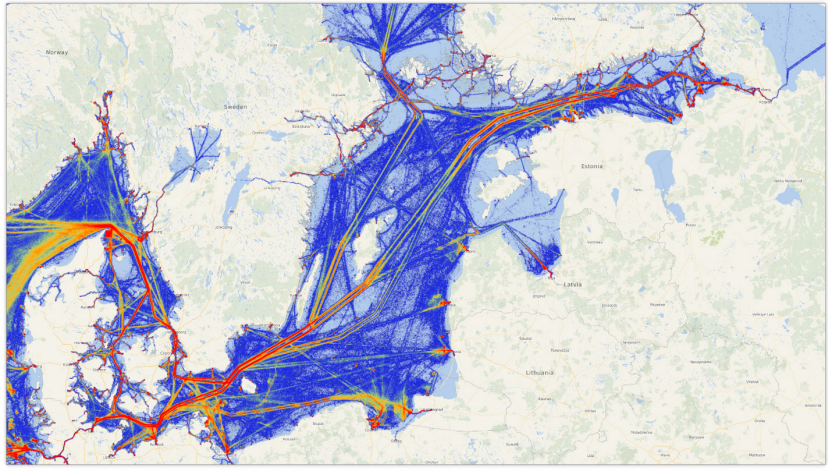

Figure 20.4: Shipping Traffic Density in the Baltic Sea during 2019. Source: Vesselfinder.com.

other pollutants, and the natural physical conditions in the region. Since the early 1900s, the sea has changed from an oligotrophic clear-water sea to the current eutrophic environment with high nutrient concentrations leading to an imbalanced ecosystem. The Baltic Sea receives 75 percent of its nitrogen load and 95 percent of its phosphorus load via rivers or as direct waterborne discharges; of this, 25 percent of the nitrogen load is discharged via airborne pollution. The 2007 HELCOM (Helsinki Commission) Baltic Sea Action Plan sought to draw up guidelines for reducing eutrophication and returning the Baltic Sea to a good state of health (HELCOM 2007). In the agreement, it was recognized that the use of phosphorus and nitrogen in agricultural fertilizers was the main source of nutrient loading in the Baltic Sea. In addition, other forms of natural resource exploitation—such as forestry, peat mining, aquaculture, and fur farming—also have a big impact on the levels of eutrophication in the sea. It was also understood that large amounts of nutrients flow into the Baltic from states such as the Ukraine and Belarus, which are outside the agreement area, due to its large geographical catchment area. Further bilateral agreements will tackle these issues.

Figure 20.5: Large areas of algae are experienced when sailing in the Baltic Sea. This is between Gotland and mainland Sweden, 25 July 2018. Photo: Andy Best.

HELCOM's vision for the future of the Baltic Sea:

> A healthy Baltic Sea environment with diverse biological components functioning in balance, resulting in a good ecological status and supporting a wide range of sustainable economic and social activities.
>
> HELCOM (2007)

From their own experience and observations, Puustinen and Best can see that the Baltic is far from being an oligotrophic clear-water sea, and from reaching the goals set out in the original Baltic Sea Action Plan 'aiming at reaching good ecological and environmental status by 2021'. According to the European Union's Water Framework Directive, between the years 2006 and 2012, only 25 percent of Finnish coastal waters were defined as being in good condition (Ferreira et al. 2007). During 2012–2017, Finnish coastal waters were in moderate condition, while none of the open sea assessment areas had reached a good level. In fact, during this period, 96 percent of the entire Baltic Sea was at worse than 'good' status, while 12 percent was in the worst possible state with regards to eutrophication (HELCOM 2018). It is clear, therefore,

that much still needs to be done to reduce the flow of nutrients and other pollutants into the sea. The goal for Imagining Godzilla is to help to draw attention to this situation by inviting artists and other researchers to experience the sea for themselves, and so to reflect on that experience through their work. Some projects may be directly political or activist in nature, but this is not a condition of participation. Works should connect in some way with the sea, the wind, the waves, and the wildlife.

The network platform is focused on the sailing catamaran Godzilla, with the Bioart Society in Helsinki as a co-developer. The aim for the coming years is to expand the network to include other partner organizations such as artistic residencies and scientific research centres as additional co-developers. Each partner brings its own body of users, whether as participating artists or members of the public as audience (Eizenmann, Parker and Van Alstyne 2007). During 2020–2022, Imagining Godzilla is part of the State of the Art Network, 'a Nordic-Baltic transdisciplinary network of artists, practitioners, researchers, and organizations who have come together to discuss the role, responsibility, and potential of art and culture in the Anthropocene'.[1] Academic and scientific partner organizations have their own specialist user groups that serve to enrich the opportunities for interdisciplinary collaborations. It will be possible in the future for the network platform to include other vessels in the Baltic or other regions of the world. As the platform grows, so the artistic and scientific results and findings will spread more widely, leading to further dissemination of knowledge and understanding of the ecological, cultural, and political issues threatening the Baltic Sea ecosystem.

The goal for *Imagining Godzilla* is to build an international network together with artistic residency centres and scientific research laboratories around the coast of the Baltic Sea. The sailing catamaran will host artist-researchers during visits to partner locations, as well as being a focal point for public presentations.

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[1] See State of the Art Network, https://bioartsociety.fi/projects/state-of-the-art-network.

Figure 20.6: The algae particles seen underwater. Photo: Andy Best.

Key targets include site-specific working, coupled with dissemination and discussion of previous artworks and research to local audiences. Research and artistic outcomes can include unique artworks, performances, exhibitions, journal articles, and research papers. According to the European Union Policy Handbook on Artistic Residencies (HAR), many contemporary artists engage in practice that closely resembles research (European Commission 2014). The type of support that artists need is not so dissimilar to that of scientific researchers, and therefore the practical support provided on Godzilla should be suitable for both. The definition for artistic residencies provided by the HAR emphasizes the opportunity for time for reflection: 'Artists' residencies provide artists and other creative professionals with time, space and resources to work, individually or collectively, on areas of their practice that reward heightened reflection or focus' (European Commission 2014). With *Imagining Godzilla* the emphasis is on focused reflection within the specific context of the Baltic Sea. The value framework for an artist residency may also be evaluated.

What are the wider benefits of the residency to the artist, to the residency organization, and to society? Kim Lehman has developed an artist residency value framework matrix (Lehman 2017). He proposes five beneficial value types that affect the individual artist, the host or local community organizations, and the wider society or regional community. According to Lehman, the resident artist gains professional development, economic benefits, and a broadened cultural awareness during the residency. The host organization and regional community also gain economic and cultural benefits from the residency. In addition, the local regional area hopes to gain creative and cultural stimulation that will lead to improved economic activity.

We could question whether the value types proposed by Lehman are suitable for Imagining Godzilla. With the tight focus on the ecology of the Baltic Sea, the aim is to bring concepts that are hidden from general view into the consciousness of the audience, with art acting as the mediator. Therefore, we could propose an additional value type of 'ecological awareness' that will affect each of the three beneficiary types—artist, host organization, and regional community.

Currently, work is being done to develop the network platform by introducing the concept to potential co-developers around the coastal areas of the Baltic Sea. The aim is to carry out further residency projects at these locations over the coming years. In each location, selected artists and researchers will carry out projects related to the environmental crisis facing the marine ecosystem as well as projects that reflect more generally on the experience of being in close proximity with the sea. We hope that the unique nature of the sailing catamaran platform will inspire artists, researchers, and audiences, and so help to bring attention to the severe problems facing the aquatic environment in the Baltic Sea region.

The Artists

Ten international and locally based artists participated in 2019, representing a wide cross-section of artistic disciplines. During this first edition of the residency, projects included sound

Figure 20.7: Eva Macali, Mohamed Sleiman Labat, and Andrew Paterson relaxing after a hard day. Andy Best and Merja Puustinen in background, 19 August 2019. Photo: Gary Markle.

art (recording both above and below the waves), video, creative writing including poetry and storytelling, drone photography, performance, and material collection and experimentation. For Best and Puustinen and Imagining Godzilla, the aim was to gain an understanding of the needs and desires of diverse artistic researchers and art-science practitioners in order to be able to develop the network platform concept further. The following artists who participated in Imagining Godzilla during August 2019 have also contributed to this publication:

Gary Markle

I explore the liminal space between land and sea through the lens of a garment that transforms the wearer into an aquatic creature, just for a brief period of time, to sense what this in-between space might feel like. I evoke the Selkie, a mythical creature—half-seal/half-human—that has the ability to

transition from an aquatic to a terrestrial domain. By shedding its seal skin, it can exist on land, but it must don this skin to return to the ocean. This creature is characterized by a feeling of never being content, neither on land nor sea. This physic state echoes the dilemma of intellectual knowing but not embracing the embodied knowing that, when integrated, allows one to act, to make the sea change needed to stop the environmental degradation of water.

Pekka Niskanen and Mohamed Sleiman Labat

The exhaustion and processing of finite resources such as phosphate are leading to terrible consequences for humans as well as for the environment. Man-made phosphate processing from agricultural activities ends up in the Baltic Sea in large amounts and is creating eutrophication, one of the biggest problems in the Baltic Sea. Thousands of miles away, a huge source of phosphate rock is located in the desert in the northern west part of Africa and is causing the dislocation of a nomadic community.

Samir Bhowmik

Keeping one's data in the cloud entails an increasing reliance on undersea cables, and thus users are entangled in invisible geographies. Analyzing the undersea network as media infrastructures draws our attention to how seemingly immaterial digital flows are anchored in material coordinates and biological strata. The project is an exploration of these dilemmas.

Eva Macali

A visual artist dealing with media arts, new media interaction, art performance, social media, and self-shaping, personal, and group identity. She responds to the sounds made on the boats, the natural elements of water and wind, using this as a starting point for her performance works to evolve and perhaps become mobile concerts.

Till Bovermann

The work addresses the relationship of contradictory elements such as urban/nature, digital/physical, and algorithm/behaviour.

Tivon Rice

An artist and educator working at the intersections of visual culture and technology. His work critically explores representation and communication in the context of digital culture and asks: How do we see, inhabit, feel, and talk about these new forms of exchange? How do we approach creativity within the digital? What are the poetics, narratives, and visual languages inherent in new information technologies? And what are the social and environmental impacts of these systems?

Andrew Gryf Paterson

A Scottish artist-organizer, educator, cultural producer, and independent researcher. His practice has involved variable roles of initiator, participant, author, and curator, according to different collaborative and cross-disciplinary processes. Andrew has worked across the fields of media/network/environmental arts and activism, specializing in workshop design, participatory platforms for engagement, and facilitation. His research interests are socially engaged art; auto-ethnographic and auto-archaeological methodologies and theory; and sustainability issues from the social, ecological, and economic perspective.

Selkie Skin: or, What to Wear When Floating in the Gulf of Finland

Author: Gary Markle

Selkie Skin is a project directly inspired by the call to participate in Imagining Godzilla. It is part of a longitudinal research and creation project begun in 2018, titled: *Wear/Where Do We*

Figure 20.8: Gary Markle Imagining. Photo: Till Bovermann.

Belong?, which investigates narratives of identity through the lens of expanded fashion in the Anthropocene. *Selkie Skin* is a materialization of the question 'What do our fashion choices have to do with the ocean?'

A Selkie is a mythical creature, half-seal/half-human, that can transition from an aquatic to a terrestrial domain with the magic of night under the light of full moon. By shedding its seal skin, it can exist on land, but it must don this skin to return to the ocean. This creature is characterized by a feeling of never being content, neither on land nor in the sea: a psychic state that echoes the

Figure 20.9: Andrew Gryf Paterson testing Gary Markle's Selkie Skin, Helsinki harbour. Photo: Till Bovermann.

dilemma currently being experienced by humanity, manifesting in the schism that exists between intellectual knowing and embodied knowing. This breach in consciousness, this collective neurosis, in turn leads to the conditions that contribute to climate change.

Healing this dysfunction is necessary to make the sea change needed to stop the increasingly global addiction to Fast Fashion. The narrative of the Selkie—a myth found throughout Scandinavia, Iceland, Orkney and Shetland Islands, Scotland, and Ireland—reminds us that cultural regions were and are (re)connected by the waterways that ancient seafarers travelled. The transmission of the myth of the Selkie parallels the spread of trade routes carrying goods, people, and ideas across the world. It also underscores the importance of water as a medium of dissemination.

Exploring the littoral zone of the Selkie, that place between land and sea, this project transforms the wearer into an aquatic creature through a performative garment. This shift in consciousness, even for a brief period, is an attempt to create empathy with the increasingly

Figure 20.10: Mohamed Sleiman Labat on Isosaari, Helsinki. Photo: Gary Markle.

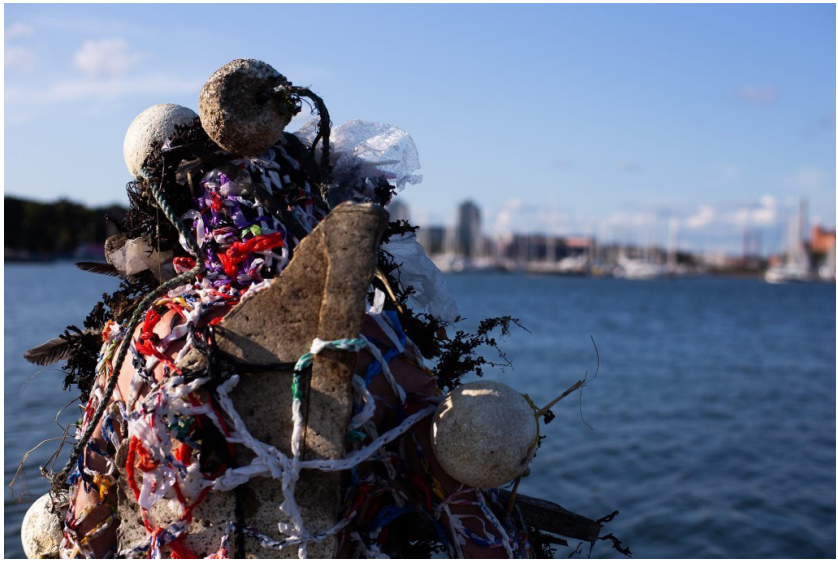

Figure 20.11: Selkie Skin against the Helsinki skyline. Photo: Till Bovermann.

Figure 20.12: Old rope found on Isosaari, Helsinki. Photo: Gary Markle.

plastic-filled waters of the world. Even when invisible, oceanic plastic waste at both macro and micro levels are now ubiquitous.

Ironically/knowingly the base garment is made of reclaimed single-use plastic bags cut into thin strips of tape-like yarn that is simplistically crocheted into a multicoloured fishing net-like matrix. It was created ahead of arrival to Helsinki to take full advantage of the available residency time for completing the 'fur' for the Selkie Skin.

The fur materials were scavenged over the course of this short but very intense residency from different sites at which Godzilla came to shore. The random nature of the collection process determined the final look of the outer coating of the garment, manifesting a site(s) specific material map of the weeklong travelling residency/sailing adventure/journey. Non-permanently attached to the crocheted plastic base by simple weaving and knotting processes, the fur was comprised of organic aquatic flora and other non-toxic postconsumer materials collected from the shoreline and other areas as possible.

Evoking the archetype of the Selkie, this liminal garment is designed to allow the wearer to float in an altered state of contemplation and heightened awareness. It slows down quotidian thinking, inviting a state of communion. Ears filled with water, sounds are muffled; nose, eyes, and mouth are aroused by the tang of salt water. Breathing is not as easy as on land, and becomes a conscious act. The mild sensory deprivation sparked by the bracing chill of the sea is strangely calming. Mutable and transi-

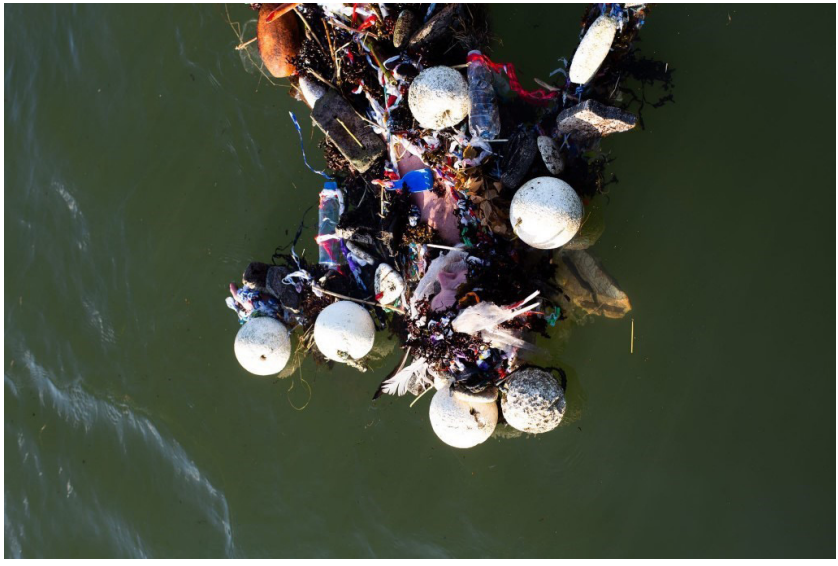

Figure 20.13: Gary Markle floating in the Selkie Skin. Photo: Till Bovermann.

Figure 20.14: Andrew Gryf Paterson wearing the Selkie Skin on the dock beside Godzilla, Helsinki harbour. Photo: Gary Markle.

tory, this fur layer is a snapshot of the specific time and place of Imagining Godzilla in August 2019. It will never be repeated in this iteration.

The coolness and isolation experienced while floating in the *Selkie Skin* was balanced by the warmth of the group dynamic. Significantly, the encouragement and enthusiastic help of fellow explorer/scavengers helped me realize my proposal. Their willingness to engage with my project increased both the range of interesting materials collected and the enjoyment of discovering them. The interconnectivity of the group experienced through sharing skills, images, meals, stories, and linkages created a wonderful bricolage, the collective spirit at the heart of *Imaging Godzilla*.

PhosFATE

Authors: Pekka Niskanen and Mohamed Sleiman Labat

In August 2019, Mohamed Sleiman Labat and Pekka Niskanen took part in the Imagining Godzilla project during Sleiman Labat's residency period at the Kone Foundation's Lauttasaari Manor. They went sailing for two days with a floating research platform, looking for evidence of the algae in the Baltic Sea. As it was late August, the blue-green algal blooms had almost disappeared and there was hardly a visible trace left of them. The micro-residency functioned as an opportunity for the PhosFATE project to film and record above and under water. This was a unique opportunity to gather material for Sleiman Labat's and Niskanen's future video installation and a film. On the final day of the micro-residency, they gave a talk about their PhosFATE project at the SOLU Space of the Bioart Society.

The PhosFATE project addresses key issues of phosphorus pollution in the Baltic Sea and the exile of the Saharawi refugees living in southwest Algeria (Fiddian-Qasmiyeh 2011; Herz 2013: 371). The Saharawi refugee camps and the Baltic Sea region share the problems of phosphate fertilizers even though the consequences are very different. PhosFATE seeks to unfold the story of this valuable mineral through interconnected layers: evoking

understanding of ecological practices, the very food on our tables, world politics and economics, and the everyday stories we tell. The project involves special and unpaired connections: a sea whose bottom is turning into a desert (Vuorinen 2017: 19), and a desert deprived of its own phosphate yet blooming with thousands of family gardens planted by a community that never settled down to farm. An artist and researcher, Pekka Niskanen works and lives in Helsinki by the Baltic Sea. A poet and artist, Mohamed Sleiman Labat was born in a refugee camp in the Hamada desert in Algeria, where he currently works as well.

The PhosFATE project began in Helsinki in July 2019 when Saharawi artist Mohamed Sleiman Labat was working as an artist in residency at the Lauttasaari Manor. The two artists collaborated for four months on a 'laboratory phase' of the project to explore the potential for art projects and artistic research. From July to October they used a Saharawi tent to collect information for the project and met researchers from different disciplines and research institutions.

Sleiman Labat brought a nomadic tent from the Hamada desert, designed and hand-sewn by the women in the Samara camp. The tent served as a space to interact with people from time to time. Sleiman Labat and Niskanen experimented with the tent at different events, using it as a moving sculpture and a space for people to discuss and share stories and poems as well as to simply experience the tent, a typical home for Sleiman Labat and his people. The PhosFATE nomad tent became a film and photography studio, a meeting place, and a public presentation forum for the project. The artists documented the tent and the meetings inside it for future parts of the project.

Many Saharawis have been forced out of their own land in the Western Sahara to the Hamada desert in Algeria due to the phosphate mines in the Western Sahara. Morocco has taken over both the Saharawi homeland and their phosphate reserves. (Leite 2006: 13, 16). Phosphate from the Moroccan mines is used in Europe to fertilize fields and forests (Lécuyer 2014: 5–6). Eventually, it will end up eutrophizing marine areas, including the Baltic Sea. Eutrophication is most evident in the form of cyanobacteria

blooms (Kahiluoto et al. 2015: 4), especially in the summer, sometimes also as traces in the frozen sea (Olofsson et al. 2019: 12). The consequences of eutrophication are oxygen depletion and changes in the fish species and the marine ecosystem, besides the increased amount of cyanobacteria (Ahtiainen et al. 2014: 9). All these signs refer to the condition of the Saharawi as refugees; the signs are not a metaphor about the condition.

Climate change is affecting everyone, including the Saharawi, many of whom live in an almost uninhabitable place in the Hamada desert. As the global temperature rises, the conditions in the refugee camps become unsustainable for several months a year. Every year, unpredictable weather phenomena and rains destroy the clay buildings that have replaced the traditional Saharawi tents in the refugee camps. Currently, during the hottest months, there is a shortage of water and food, although the Saharawi have sought to establish small gardens in the middle of the desert to secure their food supply. The new generations of the Saharawi community are highly educated and know the principles of both permaculture and circular economy.

The European Union's trade policy contains contradictions that also concern the Saharawis. In January 2019, the EU signed a trade agreement with Morocco that includes vegetables and fishing products from the Western Sahara, even though Morocco conquered the area without the approval of the international community.[2] The European Court of Justice has ruled the agreement to be illegal. The court requires the legal agreement to have the consent of the Saharawis.[3] Morocco holds more than 72 percent of the world's phosphate reserves.[4] Although Western Sahara phosphate is excluded from the trade agreement, it legitimates Morocco as one of the main phosphate producers for the European fertilizer industry. Phosphorus is an essential plant nutrient (Kaakinen 2016: 40). The EU trade agreement makes it practically impossible for the UN to hold a referendum on the Western Sahara in the future.

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[2] See European Parliament (2019a).

[3] See European Parliament (2019b).

[4] See Daneshgar et al. (2018).

The PhosFATE project also focuses on the problems of the mining industry in northern Finland. In Finland, agriculture uses phosphorus from the Norwegian company Yara. The phosphorus for the fertilizer is processed from phosphate from the Finnish Siilinjärvi mine (Geissler, Hermann, Mew and Steiner 2018: 14). Yara is possibly expanding its mining operations in Finland to Sokli, in Savukoski municipality's phosphate deposits. The mining project and its continuation will be decided on in 2021. The noise and lighting of the mining area would disturb reindeer herding in the Kemi-Sompio reindeer herd. The Supreme Administrative Court dismissed the petitioner's appeal against the Sokli mine in 2017. The mine would significantly burden the river Kemi and the Baltic Sea with phosphorus emissions.[5] The Administrative Court's decision highlights the global conflicts between the mining industry and the interests of the Indigenous people of Northern Europe. The mining industry in Finland too often ignores the natural balance of the local areas and traditional livelihoods such as reindeer herding. On the other hand, the growth of lichen that the reindeers eat has declined in Lapland, partly due to the land use and reindeer herding. Lichen only grows a few millimetres a year.[6]

PhosFATE sheds light on the global environmental problems from which Indigenous and ethnic groups have suffered for decades. Many of the nomadic communities that have been forced to settle down possess experiences, knowledge, and stories that are important for our time. The global economy's dependence on raw materials benefits some of the world's population but often overshadows the lives of minorities and their knowledges. Securing access to raw materials is important to Western societies. Quite often, it forces populations out of their native areas. This can result in irreversible changes in the lifestyle of those groups to whom the colonized land belongs, as is the case with the Saharawis.

Sleiman Labat's and Niskanen's project will highlight at least two different areas of Saharawi knowledge: their knowledge of the desert and the new knowledge of the refugee camps. The Saharawi exile in refugee camps is a result of Western food production's

[5] See Torikka (2019).

[6] See Saikkonen (2019).

dependency on fertilizers—in the case of the Saharawi, on phosphates. The work discusses and explores phosphate mainly through Western knowledge, while the situation of Sahrawi refuge es is told through their own knowledge. The Saharawi artist Sleiman Labat has collected a video and audio archive of Saharawi life from the 1930s to the present day. The archive brings up the efforts of the Spanish colonial powers to incorporate the Saharawi into the colonial system before World War II.

The postcolonial Saharawi have produced a new cultural narrative in refugee camps by practising art, building permanent houses, and developing hydroponic agriculture. In hydroponic agriculture, barley plants receive nutrients from solutions, developing up to twice as fast as in traditional farming and using 90 percent less water.[7] These three activities form the key practices in the camps, besides the activities in some Western institutions such as schools, hospitals, and libraries. All these elements mentioned above have become permanent structures in the new Saharawi narrative and for the Saharawi living in refugee camps.

Unknown Flows

Author: Samir Bhowmik

Under the Baltic Sea runs a vast network of data and electricity cables and gas pipelines. These cables belong to EstLink (power) and Telia Carrier (data), among others, that connect from Tallinn, Estonia to Helsinki, Finland. Pipelines such as Nordstream 1 and Nordstream 2, travel under the Gulf of Finland, carrying gas from Russia to Germany. In particular, submarine cable infrastructures in the Baltic Sea lie far under and beyond the public eye, and their flows remain unknown—although they cut through marine habitats and might have environmental implications. While underwater imagery might be available from the above corporate entities, gaining access to these assets is usually impossible.

Today, keeping one's data in the cloud, running the power grid or having a reliable gas supply entails an increasing reliance on

[7] See Anthem (2019).

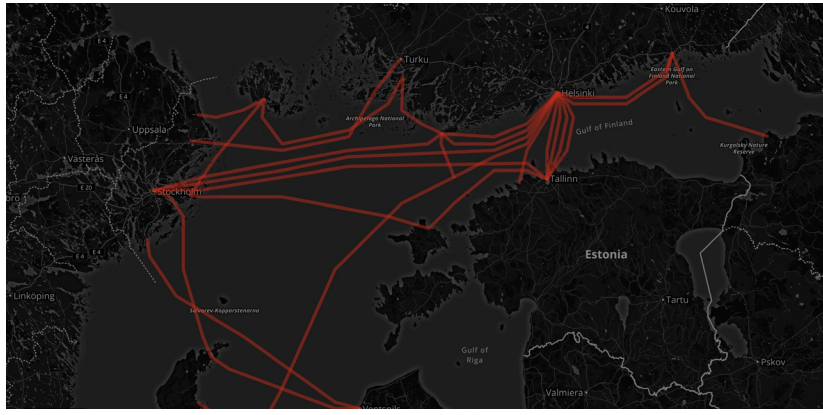

Figure 20.15: Submarine cables in the Baltic Sea. Source: Telegeography, Submarine Cable Map.

undersea cables, and users are often entangled in invisible geographies. The residency project Unknown Flows was an exploration into these dilemmas. Analyzing the undersea network as media infrastructures draws our attention to the ways in which supposedly immaterial digital flows are anchored in material coordinates and biological strata.

The project used underwater mapping technologies, such as side-scan sonar, to map the Baltic seabed, following the laying route of submarine cables. It also conducted photo documentation of the cable landings on either ends of the cables. The residency provided a wooden catamaran as a platform to conduct artistic research. The twin-engine sailing catamaran was well-suited to the exploration of underwater infrastructures. It allowed for an easy installation of the side-scan sonar, a flat work area around the main mast, and unobstructed views of the shorelines.

Before sailing, we charted the routes, and decided upon which cables and pipelines to chase. Most of the underwater infrastructure within the Helsinki archipelago can be found as graphical markings from marine maps, although they do not indicate their ownership. These markings serve no other purpose than to warn fishing trawlers, or for divers and exploration vessels. After charting, we sailed along the path of a cable, with the side-scan sonar running. At the end of the cable, the landings were photo-documented. This process was repeated several times

during the allotted sailing days. The sonar scans were video-recorded and screenshots of particular infrastructures taken. The concerns and findings were presented at the end of the residency to a public audience at the Bioart Society.

The residency revealed new insights into the nature of the sea floor, as well as limitations of exploration. For example, infrastructures depicted on charts might not be exactly where they are actually located on the seabed. Sonar imagery brings into focus discrepancies between the accuracy of the chart markings and what is expected to be situated at an exact coordinate. There is a wide tolerance, of up to several metres, in the precision of the markings. This was the primary insight from the residency.

Much of the sea in and around the Helsinki archipelago is under military jurisdiction. As such vast swathes fall into a security zone; these remained beyond the scope of underwater exploration during the residency. One needs permission from Finnish Border Security to conduct any maritime research. Although most of the archipelago is cleared, dredged of obstacles from the main shipping routes, the Baltic seabed is still littered with cables and pipes and even old, unmarked structures. This is not surprising, as this has been a busy commercial route as well as a theatre of conflict during the World Wars.

In 2017 alone, the CO_2 emissions from 23,985 different ships plying in these waters amounted to 15 Metric tonnes.[8] Recently, energy companies such as Nord Stream have been building gas pipelines on the Baltic seabed that have raised environmental questions and concerns about marine habitats. The HELCOM report mentions the endangerment of several species due to intensive shipping, fishing, and infrastructure construction on the seabed.[9]

During the recording sessions, one could not help but wonder about the extensive criss-crossing of energy cables, data cables and gas pipelines that showed up on the sonar, and how they might be damaging the marine life of the Baltic Sea.

Conducting an underwater survey is both time and energy-consuming. The side-scan sonar works with sound frequencies.

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[8] See Maritime Working Group (2018).

[9] HELCOM (2007); See also Kontula and Haldin (2013).

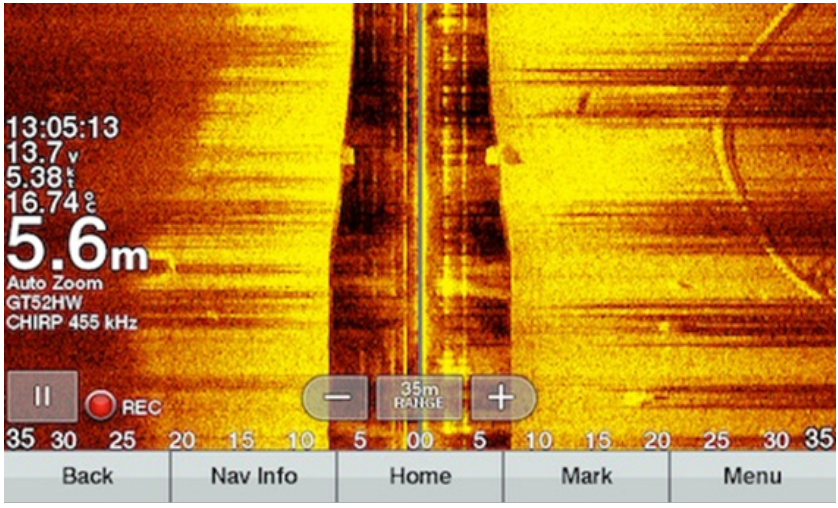

Figure 20.16: Side-scan sonar image of a pipeline. Photo: Samir Bhowmik.

The sonar used during the residency emits fan-shaped pulses toward the seabed perpendicular to the path of the catamaran. Each reflection of the pulses creates just a tiny slice, and a series of reflections creates a stream of slices that form the whole image.

To acquire underwater sonar imagery, the vessel must travel slow. The speed of the boat thus has to be maintained between 5 and 7 kilometres per hour. When sailing with the wind is not an option, and if the wind is blowing against, one needs to use the engines to manoeuvre the boat slowly along the line of the underwater infrastructure. This requires precision navigational skills and considerable use of gasoline. One can imagine the fuel consumption of large cable-laying ships that take months to lay data or energy cables on the seabed.

Sonar itself is not enough to conduct a thorough undersea exploration of media infrastructures. The imagery gathered by a side-scan sonar is merely an operational image; that is, it is acquired by non-visual instrumentation and programming. It is not a true image of the seabed, merely a digital abstraction, without a broader context. There is hardly any colour differentiation, nor is it representative of the materiality of the seafloor. Undoubtedly, sophisticated devices are needed to conduct research, and this is beyond affordability in an artistic research context.

To understand and address the environmental damage to the Baltic Sea caused by underwater infrastructure, more awareness among the public is needed. In addition, cable-laying entities should be required to communicate about their activities by providing detailed seabed information thorough public environmental reports. Grassroots and activist organizations must demand more justifications and assessments from the state and transnational organizations about shipping routes, cable-laying, and construction through fragile marine habitats.

Underwater Godzilla Notes

Author: Eva Macali

UNDERWATER GODZILLA

I can change the name the change, can I
how do you do you do how
the change has a name has a-change-the
there is only love only is there
underwater godzilla is saying is godzilla underwater?

I need peace that is pace
I need peace at a fast pace
rauha rauha rauha

In the harbour, in Katajanokka, the magnetic keys to enter the gate were shaped like little sky-blue tiles, the girls at the marina counter with light blonde hair, the always alarming weather forecasts that never came true because every day was a sunny day. Rain showers only on Monday and on Friday, like decorations at the margins of the week. Lots of coffee with milk macchiatura, but then, sleep was coming so early, earlissimo, because of the weariness of navigating and researching.

On the catamaran, I've been eating all the time and sometimes drinking wine, often Italian. The only smoking one was Samir

and an artist from Morocco who showed up at the presentation night at the end of the week. The other ones just drank, and when they drank, their personality changed a bit. In Finland, I feel fascinated by the prodigious way people deal with technology. They use technology in their everyday lives instinctively, and combine this inclination with a deep connection to nature. I found myself asking: how can I express the sweetness of the latitudes where I grew up? The Mediterranean sweetness is something that deals with the pleasure of living and has something to do with pleasure. In this regard, I had three sauna baths in the public bathroom of the harbour. The sauna was scarily hot (100 degrees Celsius); therefore, I was doing very short sauna sessions with iced shower breaks to resist just a little bit more. It's a different kind of pleasure.

I went to visit Petri Kuljantausta, a gorgeous and generous sound artist who provided me with the submarine microphone I used to record the underwater poetry. He was busy and did not make it to get on board and visit *Godzilla*—a little masterpiece of boat-making and the result of a ten-year restoration. *Godzilla* is a catamaran with a fair number of imperfections that make it lovely; a work of art brut with a hybrid Viking-Polynesian aesthetic and all the basic comforts, including a solar panel-powered fridge and adjustable multichromatic led lamps. On the *Godzilla*, I was not the only one focused on the underwater world. Samir was also working on a project on underwater cables. There were conversations about what was happening under the water line. Andy and Merja, while sailing off the coast a few weeks before, saw a Russian submarine passing below. There was a big debate about a project for an underwater tunnel to be built between Helsinki and Tallinn.

Just behind the harbour in Katajanokka, there was a building site full of Estonian workers. Every morning, they started the workday by playing a Tallinn radio station at high volume; that became our wakeup ringtone. One day after the other, we became affectionate toward them, and they started recognizing us because we were going back and forth to SOLU space, and we were looking at

them. Some of us also started wearing Estonian t-shirts from their t-shirt collections. The other boats in the harbour were luxury motorboats, spit-shined by silent and zealous crews; the owners never showing up. We were always saying hello moi, but we were inhabiting the jetty with our accessories and art objects, and the crews kept their distance. While navigating on the catamaran, we lay on the wooden slats and the spurts between the fissures reminded us of the sea below us. It felt so good.

I think 'Underwater Godzilla' is a sound poem that can be related to the experimental writing practices of twentieth-century avant-garde movements such as dada and futurism, among others. It's a voyage whose destination can be found between sound and meaning; a place whose perimeter is blurred by definition but has been widely inhabited in European literature (for example, with madrigal in Italian middle-age times) and, in general, in folk oral poetry at multiple latitudes and longitudes, when onomatopoeia is employed.

'Underground Godzilla' has been written following the scheme of underwater sound propagation: many sea creatures emit pulses of sounds and listen for echoes in order to orientate themselves in the 3D space. The first recorded use of the technique was by Leonardo da Vinci in 1490, when he used a tube inserted into the water to detect vessels by ear. This mechanism, which can also be compared to an idea of mirroring, is the grid where the poetry text has been written. This same mirroring idea can be seen visually as a symmetry concept, since the poetry text uses symmetry in sentence building through the rhetorical figure of palindrome, applied not to a single word but to a sentence.

At the end of the project, I had the chance to pair the poetry with video footage shot by Mohamed, who is Algerian, showing a point of view just below the water line. We did not say a word about the video, but I could not help thinking about what is happening in the Mediterranean sea, far away from the Baltic Sea, where migrants from Africa and the Middle East escape intolerable situations and consciously run the risk of drowning while crossing the great water.

Figure 20.17: Godzilla's mast. Photo: Till Bovermann.

Imagining Godzilla—Memories of an Excursion

Author: Till Bovermann

How to approach a complex environment such as the Baltic Sea with its unique interrelations and cultural connotations? How to deal with its insurmountable borders between rock, air, and water, separating the above from the below, the wet from the dry? Sound and augmented listening is a powerful instrument to convey feelings and evoke emotions. The absence of (moving) images allows the listener to focus on the imaginative, the implicit. As Hildegard Westerkamp puts it

on her website,[10] '[…] conscious listening and soundmaking is a way of placing ourselves inside the workings of our cultures, societies, and landscapes as involved, living participants'. 'Imagining Godzilla—Memories of an Excursion'[11] is an attempt to tell a story sonically about the week of Imagining Godzilla mini residencies through sounds and sonic impressions I collected during my stay on the vessel. It is a sonic narration in which I did not try to provide objective truth but rather focused on collecting subjective impressions, inviting listeners to associate with the narrated situation through their senses. They are invited not only to take my position as a passenger on the vessel, but also to listen through the boat itself, its structural elements and moving, creaking joints. Hence, the aim of my work was to give voice to both human as well as other-than-human participants of our journey. The piece is divided into six parts:

- Excitement—There was a feeling of excitement among travellers, paired with a certain unsettledness caused both by the novelty of being on a catamaran and by being surrounded by unknown people. The typical chatter that arises in such situations was soon drowned out by the overwhelming drone of Godzilla's twin motors moving us out into the archipelago.
- Coordination—The silence after this motorized entrance introduced a strange calmness in me, paired with the slightly discomforting feeling of not being in control. Heavily rocking over the waves, it took lots of coordination by our skippers to make our way through the surprisingly heavy gusts.
- Internalization—After listening out, we now turn to listening into and through the boat's structure: how it is moving and twisting, rigging banging the metallic mast, the hulls shifting slightly in their dynamic suspension to the platform.
- Perspective—Shifting perspective, slowly moving from the inside to the outside; listening to stories told by the wind, the waves, and the skippers.
- Inspection—We listen to the sounds of approaching an island, connections between the floating raft and the seemingly stable ground of a large, solid rock were established, if only temporarily and with the help of rubber bumpers.

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[10] Westerkamp (n.d.) Hildegard Westerkamp: Inside the Soundscape.
[11] Bovermann (2019).

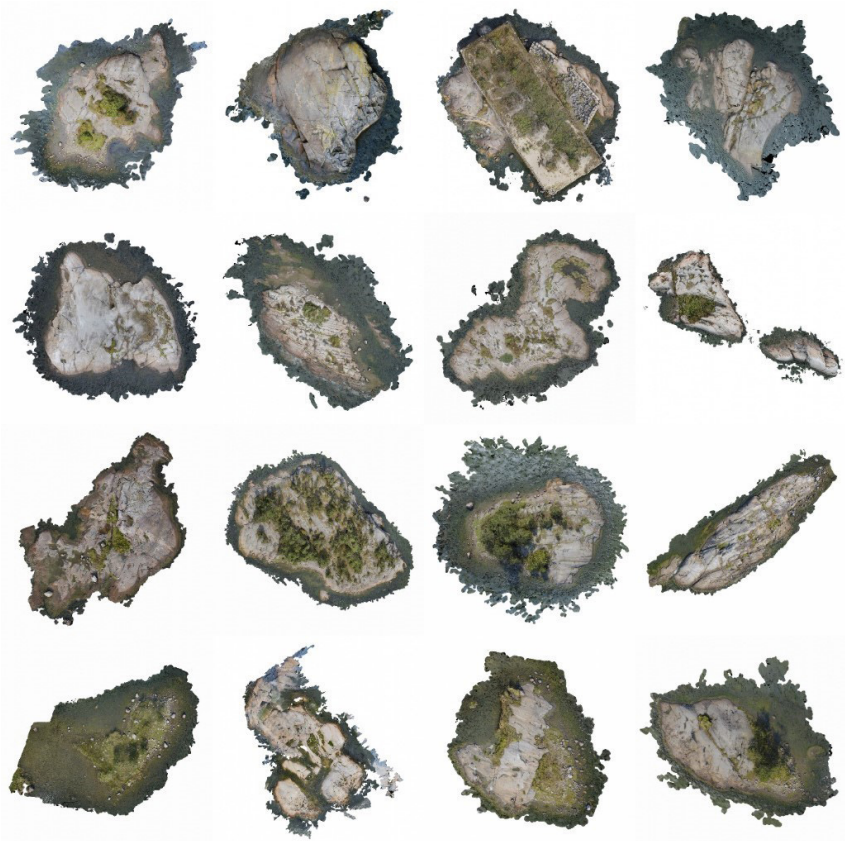


Figure 20.18: Images of islands created using photogrammetry. Image: Tivon Rice.

- Return—We eventually return, recognition of the repetitive rolling sounds of the wind turbine is slowly overridden by the twin motors bringing us back to the Helsinki harbour.

You may listen to Imagining Godzilla—Memories of an Excursion at https://archive.org/details/imagininggodzilla.

Photogrammetry of the Finnish Archipelago

Author: Tivon Rice

Throughout the northern Baltic Sea, thousands of small islands reveal the traces of glacial scarring—evidence, etched in stone, of events occurring long ago. Fast-forward 10,000 years, and we

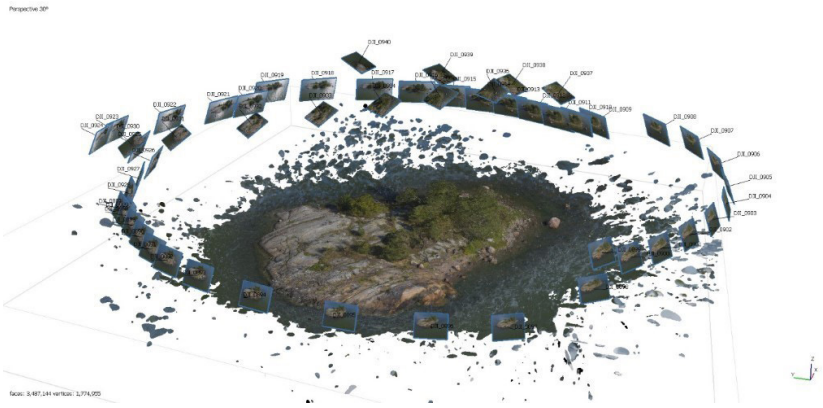


Figure 20.19: Illustration of how a single 3D image of an island is created using photogrammetry technique. Image: Tivon Rice.

find the process is still unfolding, as post-glacial rebound lifts the Finnish archipelago twice as fast as the pace of sea-level rise. With the paradoxes of these human and non-human timeframes in mind, I joined Bioart Society's residency Imagining Godzilla to explore the islands surrounding Helsinki.

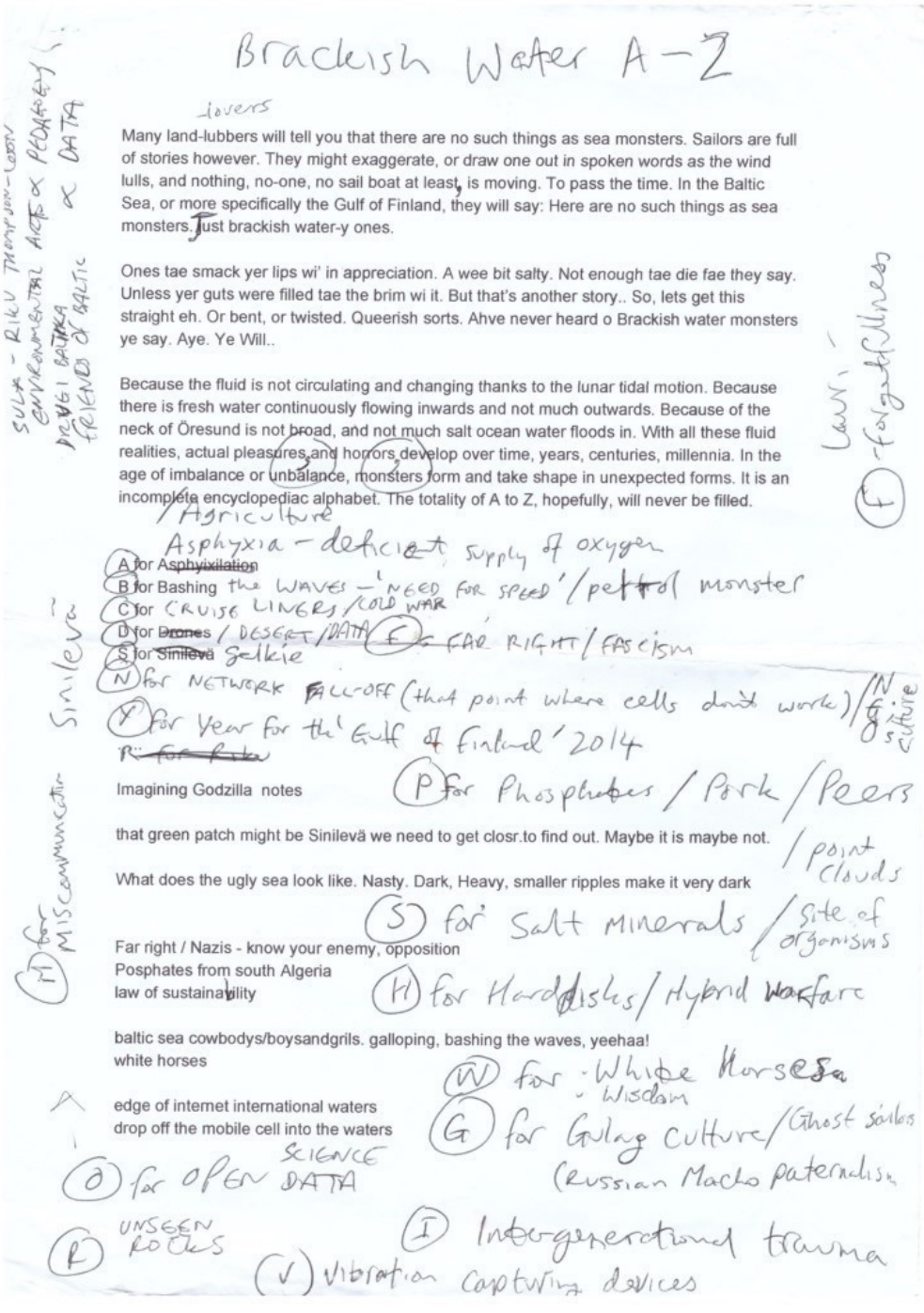
Launching a drone from the deck of the catamaran Godzilla, I flew above dozens of the small granite masses emerging from the water. By taking hundreds of high-resolution photos, I was then able to create 3D virtual reconstructions using a process called photogrammetry. This archive of digital models creates a kind of machinic view of the landscape—point clouds, vertices, pixels, and textures representing the island's topography.

Brackish Water A–Z

Author: Andrew Gryf Paterson

Reflections on Imagining Godzilla

I sit here writing in April 2020, during the coronavirus pandemic. How clearly we now see that mankind is intrinsically linked to the natural world. Globally, entire industries are shut down, travel restrictions in place, national populations in lock-down.



Brackish Water A–Z

lovers

Many land-lubbers will tell you that there are no such things as sea monsters. Sailors are full of stories however. They might exaggerate, or draw one out in spoken words as the wind lulls, and nothing, no-one, no sail boat at least, is moving. To pass the time. In the Baltic Sea, or more specifically the Gulf of Finland, they will say: Here are no such things as sea monsters. Just brackish water-y ones.

Ones tae smack yer lips wi' in appreciation. A wee bit salty. Not enough tae die fae they say. Unless yer guts were filled tae the brim wi it. But that's another story.. So, lets get this straight eh. Or bent, or twisted. Queerish sorts. Ahve never heard o Brackish water monsters ye say. Aye. Ye Will..

Because the fluid is not circulating and changing thanks to the lunar tidal motion. Because there is fresh water continuously flowing inwards and not much outwards. Because of the neck of Öresund is not broad, and not much salt ocean water floods in. With all these fluid realities, actual pleasures and horrors develop over time, years, centuries, millennia. In the age of imbalance or unbalance, monsters form and take shape in unexpected forms. It is an incomplete encyclopediac alphabet. The totality of A to Z, hopefully, will never be filled.

Agriculture

A for Asphyxiation — Asphyxia – deficient supply of oxygen

B for Bashing the WAVES – 'NEED FOR SPEED' / petrol monster

C for CRUISE LINERS / COLD WAR

D for Drones / DESERT / DATA

E for FAR RIGHT / FASCISM

S for Sinilevä Selkie

N for NETWORK FALL-OFF (that point where cells don't work)

Y for Year for the 'Gulf of Finland' 2014

P for Phosphates / Pork / Peers

Imagining Godzilla notes

that green patch might be Sinilevä we need to get closr.to find out. Maybe it is maybe not.

What does the ugly sea look like. Nasty. Dark, Heavy, smaller ripples make it very dark

S for Salt Minerals / Site of organisms

Far right / Nazis - know your enemy, opposition
Posphates from south Algeria
law of sustainability

H for Hard disks / Hybrid Warfare

baltic sea cowbodys/boysandgrils. galloping, bashing the waves, yeehaa!
white horses

W for White Horses / Wisdom

edge of internet international waters
drop off the mobile cell into the waters

G for Gulag Culture / Ghost sailors (Russian Macho paternalism

O for OPEN SCIENCE DATA

R UNSEEN ROCKS

I Intergenerational trauma

V Vibration capturing devices

Posts on social media tell of amazement at clear skies over cities, the 'noise' of long-forgotten birdsong. Sea turtles mass to lay their eggs on beaches deserted by tourists, while wild animals dare to roam our cities and suburbs now that the humans are nowhere to be seen. Given the opportunity, Nature tries her best to restore balance to the world. With Imagining Godzilla, we too try to imagine an alternative world: a world where agriculture is in balance with the natural world; a world where natural resources are utilized using sustainable methods, not by exploitation and destruction.

The artists who have written about their experiences while taking part in the residency onboard the sailing catamaran *Godzilla* use artistic methods to tune in to and communicate with the natural world—above, below, and at sea level. We humans are land-based creatures, and so it takes time to get used to being at sea—to 'get your sea legs'. This is the point of the residencies—to give time for reflection, understanding, and getting to know this Other, the Baltic Sea. The view of the sea from land is like a magnificent shimmering vista, yet, out on the sea, one is immediately confronted by wind, waves, unfamiliar noises, and sensations. The aesthetic experience at once becomes corporeal. Eva Macali, Gary Markle, and Till Bovermann all speak of this bodily experience in their project descriptions, yet each has approached this communion with the sea through very different mediums. Eva has used language, a very human-specific form; yet, by trying to recite her poem underwater, it enters the realm of the absurd. Who is her poem for—the fish swimming nearby? Gary links myth with the reality of ever-present plastic pollution and so creates his Selkie Skin with which he transforms himself to that Other, the creature—or is he just more flotsam? A metaphor not only for the degradation of the sea itself, but also for the countless human lives made worthless by globalization, condemned to lives of homelessness, drifting as waste on the edges of society. Till Bovermann records the sounds he experiences while he is on Godzilla and visiting islands. These become snippets of audio storytelling, the layers of sound waves reflecting Till's own (very physical) experience of waves, wind, rock, and sand. And while we speak of rock, Tivon Rice uses state-of-the-art technology to recreate islands and

islets into virtual 3D landscapes. The eye of the machine gazes at the natural world, but what does it understand?

But this other, the sea, does not escape our political clutches, our human power grabs. Pekka Niskanen and Mohamed Sleiman Labat's PhosFATE project weaves together the fates of the Saharawi people, driven into exile from the Western Sahara, with that of the highly polluted Baltic Sea. The sea is in a high state of eutrophication due to fertilizer run-offs from agriculture all around the Baltic Sea basin. Phosphate—access, exploitation, and use—is key to solving both these issues. Samir Bhowmik's interest is under the waves. Where is data flowing, and who controls that flow? Searching for clues on the seabed is challenging when owners want to keep the networks hidden from public scrutiny.

We artists, just as scientists and other researchers, are searching for the answers to our riddles. We pose research questions, and, using artistic strategies, try to move closer bit by bit to a solution, or at least toward finding some meaning. Andrew Gryf Paterson provides the guidebook for our struggles—Brackish Water A–Z. Just as in days gone by, when sea charts were marked with 'Here be monsters', so Andrew reminds us that the Baltic Sea, this hardly-sea 'Brackish Water, is more than just a pretty stretch of water for tourist trips and ferries to Tallinn.'

And so now we wait in our man-made cubicles for the coronavirus all-clear. But while most people wait to go back to their normal, everyday lives, we wait to get back to *Godzilla*, to continue imagining with other artists and researchers. We seek to expand the network and continue using artistic methods to highlight the problems and challenges facing the Baltic Sea. Through the art research network platform, we can disseminate the knowledge and information that our guest artist-researchers uncover, as well as showcasing the unique artworks developed during Imagining Godzilla residencies. We can hope that these efforts will lead to attitudes changing; that there will be some new-found respect for the environment from politicians and industry. We must act now to save the Baltic Sea ecosystem. It must be given the chance to come back to life.

Andy Best
Espoo 12 April 2020

Here you can find information about the network platform and documentation from the summer 2019 edition of Imagining Godzilla:

Website for Imagining Godzilla—http://imagininggodzilla.fi
Informal logbook recordings by Bioart Society—https://bioartsociety.fi/posts/imagining-godzilla-logbook

References

Ahtiainen, H., J. Artell, R. Elmgren, L. Hasselström and C. Håkansson. 2014. 'Baltic Sea Nutrient Reductions. What Should we Aim for?' *Journal of Environmental Management*, 145 (1): 9–23.

Anthem, P. 2019. 'How I Grew Barley in the Desert'. UN World Food Programme. Accessed 16 October 2019. https://insight.wfp.org/innovation-in-the-desert-30f90f846ec0.

Attila, J. 2019. 'Water Quality Monitoring and Assessment of the Northern Baltic Sea Using Earth Observation'. Doctoral diss. Aalto University, Finland. Accessed 20 January 2020. http://urn.fi/URN:ISBN:978-952-60-8867-9.

Bovermann, T. 2019. 'Imagining Godzilla'. Internet Archive. Accessed 31 January 2020. https://archive.org/details/imagininggodzilla.

Daneshgar, S., A. Callegari, A. G. Capodaglio and D. Vaccari, D. 2018. 'The Potential Phosphorus Crisis: Resource Conservation and Possible Escape Technologies: A Review'. *Resources*, 7(2), 37: 1–22. Accessed 24 October 2019. https://doi.org/10.3390/resources7020037.

Eisenmann, T., G. Parker and M. Van Alstyne. 2007. 'Network Platforms – Core Concepts'. MIT Center for Digital Business. Accessed 15 January 2020. http://ebusiness.mit.edu/research/papers/232_VanAlstyne_NW_as_Platform.pdf.

European Commission. 2014. 'European Union Policy Handbook on Artists' Residencies'. Accessed 20 January 2020. https://ec.europa.eu/assets/eac/culture/policy/cultural-creative-industries/documents/artists-residencies_en.pdf.

European Parliament. 2019a. 'EU-Morocco Agreement on the amendment of Protocols 1 and 4 to the Euro-Mediterranean Agreement (Resolution)'. Accessed 20 October 2019. http://www.europarl.europa.eu/doceo/document/TA-8-2019-0016_EN.html.

European Parliament. 2019b. 'Preferential tariffs to help Western Sahara to develop'. Accessed 20 October 2019. https://www.europarl.europa.eu/news/en/agenda/briefing/2019-01-14/9/preferential-tariffs-to-help-western-sahara-to-develop.

Ferreira, J., C. Vale, C. Soares, F. Salas, P. Stacey, S. Bricker, M. Silva and J. Marques. 2007. 'Monitoring of Coastal and Transitional Waters Under the E.U. Water Framework Directive'. *Environmental Monitoring and Assessment* 135: 195–216. Accessed 20 January 2020. https://doi.org/10.1007/s10661-007-9643-0.

Fiddian-Qasmiyeh, E. 2011. 'Protracted Sahrawi Displacement – Challenges and Opportunities Beyond Encampment'. Refugee Studies Centre, Oxford Department of International Development, University of Oxford. Accessed 18 October 2019. https://www.refworld.org/pdfid/4e03287b2.pdf.

Geissler, B., L. Hermann, M. Mew and G. Steiner. 2018. 'Striving Toward a Circular Economy for Phosphorus: The Role of Phosphate Rock Mining'. *Minerals*, 8 (9): 1–22.

HELCOM. 2007. HELCOM Baltic Sea Action Plan. Helsinki Commission. Accessed 2 August 2021. https://helcom.fi/media/documents/BSAP_Final.pdf.

HELCOM. 2018. HELCOM State of the Baltic Sea – Second HELCOM Holistic Assessment 2011–2016. Helsinki Commission. Accessed 2 August 2021. http://stateofthebalticsea.helcom.fi/pressures-and-their-status/eutrophication/.

Herz, M. 2013. 'Refugee Camps of the Western Sahara'. *Humanity Journal*, 4 (3): 365–391.

Kaakinen, J. 2016. *Öljyllä ja raskasmetalleilla pilaantuneita maita koskevan ympäristölainsäädännön ja lupamenettelyn edistäminen kemiallisella tutkimuksella*. Doctoral Dissertation, University of Oulu, Oulu.

Kahiluoto H., M. Kuisma, A. Kuokkanen, M. Mikkilä and L. Linnanen. 2015. 'Local and Social Facets of Planetary Boundaries: Right to Nutrients'. *Environmental Research Letters* 10.

Kontula, T. and J. Haldin, eds. 2013. 'HELCOM Red List of Baltic Sea species in danger of becoming extinct'. Baltic Marine Environment Protection Commission Proc. No. 140. Helsinki: Helsinki Commission.

Lécuyer, B. 2014. *The World Phosphates Market: What Risk for the European Union?* Fertilizer Working Group, 2 June 2014, Institut National de la Recherche Agronomique. 1–6.

Lehman, K. 2017. 'Conceptualising the Value of Artist Residencies: A Research Agenda'. *Cultural Management: Science and Education*, 1 (1): 9–18. Accessed 10 December 2019. https://doi.org/10.30819/cmse.1-1.01.

Leite, P. 2006. 'International Legality Versus Realpolitik – The cases of Western Sahara and East Timor'. In *The Western Sahara Conflict*,

edited by C. Olsson. Current African Issues 33: 11–16. Uppsala: Nordiska Afrikainstitutet.

Maritime Working Group. 2018. 'Emissions from Baltic Sea Shipping in 2017'. Baltic Marine Environment Protection Commission. Accessed 2 August 2021. https://portal.helcom.fi/meetings/MARITIME%2018-2018-503/MeetingDocuments/4-3%20Emissions%20from%20Baltic%20Sea%20Shipping%20in%202017.pdf

Olofsson, M., A. Torstensson, M. Karlberg, F. S. Steinhoff, J. Dinasquet, L. Riemann, M. Chierici and A. Wulff. 2019. 'Limited Response of a Spring Bloom Community Inoculated with Filamentous Cyanobacteria to Elevated Temperature and pCO2'. *Botanica Marina*, 62 (1): 3–16.

Saikkonen, T., V. Vahtera, S. Koponen and O. Suominen. 2019. 'Effects of Reindeer Grazing and Recovery After Cessation of Grazing on the Ground-Dwelling Spider Assemblage in Finnish Lapland'. *PeerJ*. 7: e7330. Accessed 20 October 2019. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6642629/.

State of the Art Network. n.d. Bioart Society. Accessed 15 December 2020. https://bioartsociety.fi/projects/state-of-the-art-network.

Telegeography: Submarine Cable Map. Accessed 30 July 2021. https://www.submarinecablemap.com.

Torikka, R. 2019. 'Lannoiteyhtiö Yara laskee uudelleen Soklin kaivoksen kannattavuuden—jatkosta päätetään aikaisintaan vuonna 2021'. YLE. Accessed 2 August 2021. https://yle.fi/uutiset/3-10742598.

Vuorinen, I. 2017. 'Itämeren muuttuva ekosysteemi'. *Tieteessä Tapahtuu*, 35 (3): 17–22.

Westerkamp, H. n.d. Hildegard Westerkamp: Inside the Soundscape. Accessed 31 January 2020. https://www.hildegardwesterkamp.ca.