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Translating Slow Violence: The Use of Environmental Data in Art as Un-Forecasting

Abstract: This paper explores the potentiality of environmental data translation into affective artistic experiences. Slow violence in the environment is imperceptible and requires techniques of translating it into visual and sonic experiences. In the process, environmental data is used as a currency for translation. Shoshana Zuboff in *The Age of Surveillance Capitalism* discusses data collection is integral to a surveillance society, yet, data, when given back to citizens, can empower them, and in such a scenario, artists can play a crucial role. By discussing examples of contemporary artworks, the paper observes how ecological situations are captured as data and translated into affective experiences. Environmental data, however, is used also to speculate, predict, and even determine potential scenarios to happen in the future, as in the case of the weather forecast, and used to eliminate uncertainties. This paper argues that art helps make environmental data widely accessible, and suggests an alternative passage from predetermined scenarios speculated from data collection.

Keywords: environmental data; slow violence; citizen science; contemporary art.

A crisis, when it refers to the current state of the environment, implies an illness in which the symptom has reached a critical point. Even though the illness has been progressing slowly and gradually, the realization of the condition does not take place until the symptom becomes disturbing. In this regard, “slow violence”, coined by Rob Nixon, conveys the sense of progressing damage caused by an imperceptibly slow form of violence.¹ Nixon’s definition of slow violence articulates the posterior impact of violence, instead of the spectacular appearance of violence as a dramatic event, isolated from the continuity of every day.² Similarly but distinctly from Nixon, Slavoj Žižek deploys the term “objective violence” to consider a form of institutionally

¹ Rob Nixon, *Slow Violence and the Environmentalism of the Poor* (London: Harvard University Press, 2013).

² *Ibid.*, 2.

embedded violence that leads to the violent moment of spectacle.³ While Nixon's emphasis is on the posterior violence from the event, Žižek emphasizes the anterior development of damage that leads to a crisis point. Despite their differences, both pay attention to the longer duration of violence, instead of the point of spectacle. Noting their emphasis on the aspect of duration in violence than the visible impact of violence as a spectacle, violence should be understood as a gradual, undetectable, and durational form of damage. Violence is slow, and thus imperceptible. Here, imperceptibility is incorporated into slowness that conceals violence. Violence is a practice of power subjugating the Other for the purpose of domination and destruction. In this particular sense, the environmental crisis is a symptom of violence.

When the inflicted violence on the environment is invisible and imperceptible, how can one know the level of violence? At this point, the notion of translation becomes relevant. The following examples of artworks will illuminate manners in which violence is made visible. For instance, how does anyone begin to know about the melting glaciers in Iceland? Katie Paterson's artworks *Langjökull*, *Snæfellsjökull*, *Solheimajökull* (2007) are three discs, and each one is placed on a turntable. When a needle of each record player is dropped on the disc, they would play a piece of music, or so one would expect. However, the discs are made out of ice from three glaciers in Iceland. Each disc plays sounds of melting glacier until the disc is melted down. The aspect of translation in this work is two-fold. First, the sounds of melting glaciers are recorded and pressed into the discs made out of ice. The ice discs are records of the sounds turned into analog information to be picked up by the needle of the record player. Once the needle is dropped and each player begins to turn its disc on it, the analog information carved into the grooves is again translated into sounds for the listener. The melted discs no longer return to their solid forms. The irony is carved into the artwork commenting on the current state of human relationship to the environment including an element of violence. Theodor Adorno in his *Aesthetic Theory* says:

Artworks extend the realm of human domination to the extreme, not literally, though, but rather by the strength of the establishment of a sphere existing for itself, which just through its posited immanence divides itself from real domination and thus negates the heteronomy of domination.⁴

Adorno suggests art as a form of domination over "nature" is bifurcated from the more direct form of human domination. When considering these paradoxical and complex aspects of art, Paterson's work elucidates an element of violence inherent in every gesture the artist makes, and the audience of art as consequentially complicit in the violence. Art cannot bypass its own violence while commenting on other recognizable forms of violence. Violence in the double fold reveals firstly the general violence resulting in the melted glaciers. The second fold reveals art as a subtle form

³ Slavoj Žižek, *Violence: Six Sideways Reflections* (London: Profile Books, 2008), 2.

⁴ Theodor Adorno, *Aesthetic Theory* (London: Athlone Press, 1999), 77.

of violence paradoxically criticizing the general violence while condensing human achievement in an objectified form in art. The complex folds allow the viewer to access these thoughts through the process of translation. In the work of Paterson, translation allows access to the impact of one's unnoticeable violence through being part of larger operations of contemporary industrial society in distant glaciers. Since at least more than one hundred years are required for glaciers to form, it is alarming to realize drastic changes have been occurring even in the last fifty years.

Rachel Sussman's photograph, *Spruce Gran Picea #0909-11A07*, shows a tree extending its height into the expansive sky in the background. It seems an anonymous tree, and yet, it is placed in the center. Put it simply, the photograph is a portrait of a tree, standing in the middle of rocky grounds. There are no other trees of its height in sight. At the root of the tree, there are crawling low bushes surrounding the tree. There is nothing spectacular about the tree in the middle of the barren landscape. It is rather frail and thin than heroic, if to characterize the appearance of it. In fact, this Spruce Gran Picea, when photographed, was approximately 9,500 years old. According to the artist, the tree had grown taller in the last fifty years, due to rising temperatures in the area of Sweden where the tree had lived for 9,500 years. The tree had always kept itself low near the ground like the surrounding ones for thousands of years till the change in the climate began to make a notable impact on the growth of the tree. The accelerated changes in the climate brought by human civilizations in the last fifty years culminate in the aged tree as a visible indicator of violence. Sussman's photograph first appears as a landscape but is a portrait of the tree who is living the consequence of larger ecological changes. For a viewer of the photograph, height is an immediately notable aspect of the tree, but also its frailness suggests its vulnerability. The muteness of the tree until the artist turned her camera is another sign of its helplessness. Sussman captures the ancient tree that translates the climatic changes and their impact on itself. The artist does not translate the violence itself, but Sussman recognizes, observes, and records the violence. In this sense, the artist is a translator for the silent tree. Both Paterson's and Sussman's works concern rising temperatures as a part of global warming. Violence exercised on the environment is translated into visual experiences while both artists comment critically on the alarming development.

Translating imperceptible violence requires media including ice discs and photography. In another example, data begins to play a role in the process of translation. Two yellow electrical guitars are fixed to stands in Fuyuki Yamakawa's *Atomic Guitar*. Between the two guitars, there is a pot of soil, extracted from a ground in Tokyo. Two Geiger counters detect radiation from the soil and send the data to a tactile transducer, a device shaking the guitars. As the guitars are shaken, they make sounds as if a large metal gong is repeatedly stricken. Since radiation is invisible, the translation of its movements in the air needs to be detected by the Geiger counters, to be made into data and sent to the tactile transducer, a device translating the data, and shake the guitars. At the receiving end, audiences hear the guitars and understand that the environment in which they are hearing the sounds is radioactive, yet, only this is knowable

through the process of translation. Although the level of radiation detected by the Geiger counters might not exceed the safety level, the work reminds audiences that radiation is active in the atmosphere and it is beyond human sensory capacity. Here, data begins to play a crucial role. By deliberately incorporating the Geiger counters, data translation comes to the fore in *Atomic Guitars*.

Revelatory Function of Environmental Data

Translating invisible forces into visual domain allows the viewer to access knowledge about violence on the environment. The following examples of artworks critically deploy environmental data and provide another layer of knowledge to the authorized form of environmental knowledge. Put another way, who is able to produce and authorize data of environmental degradation? Let us consider Forensic Architecture, Carbon Visuals, and Safecast. Forensic Architecture deploys visual and sonic data to investigate human rights violations. Led by the architect Eyal Weizman, the team collects data to re-construct a scene of human rights violation. The practice of Forensic Architecture, according to Weizman, is an “aesthetic practice”.⁵ Forensic aesthetics is analytical, first, and that is required to reconstruct an event in the past in order to bring justice. Let us look at the use of data in their work on the ecocide of ancient forests in Indonesia among a variety of their investigative works.

In 2015 an ungraspable scale of fire engulfed areas of Kalimantan and Sumatra in Indonesia. Later, the fire extended its damage to Malaysia, Singapore, Thailand, and Vietnam. How was such enormity of fire possible? It appears that the dried peat land prepared a condition for this fire to spread. The areas covered with peat was drained and dried for agri-business to operate. Especially these steps were taken for the palm oil industry. According to Forensic Architecture, the destruction of the vast areas appears to be a result of the co-operations between the Indonesian government, the army, and international business in the latter part of the twentieth century. Casualties include orang-utans, as a mass grave of them was found on the border between two palm oil plantation territories. Although it is difficult to make any particular palm oil company accountable, by locating on the map and making this information available for anyone, Forensic Architecture is translating the narrative of the crime into a piece of visual information. With this, the viewers can begin to reconstruct the history of the devastation. For their research, Forensic Architecture deployed remote sensing analysis comprised of analyzing the burning ration of the forest provided by satellite images, in order to estimate the severity of fire damage.

When arsons were committed to ignite fires in the forests, smoke covered the forests and the fires became invisible to a satellite. Analyzing infrared data, and locating the points where heat was recorded, Forensic Architecture was able to locate the fires hidden in the smoke. Moreover, by analyzing the high density of carbon in the

⁵ Eyal Weizman, *Forensic Architecture: Violence At The Threshold of Detectability* (New York: Zone Books, 2017), 95.

atmosphere Forensic Architecture was able to visualize the impact of air pollution generated by the arsons to clear the indigenous lands for palm oil production. In comparison, various techniques of visualizing environmental data have been developed by other groups including Carbon Visuals, a consultant firm, which has translated carbon dioxide emissions in easily comprehensible visual images.⁶ In one example, their animated video shows the amount of greenhouse gas emissions released into the atmosphere in voluminous bubbles. As the bubbles accumulate, they begin to cover one area of New York and skyscrapers begin to be buried in the bubbles in a day. In a year, New York is buried in a mountain of bubbles made up of greenhouse gasses. Although this approach is easily understandable through the simple visual trope of translating volumes of gasses into bubbles, as a consultancy firm, it can also serve the interest of clients who require visually persuasive material for advancing their commercial interests.

In comparison, Forensic Architecture remains critical and explicitly political. Translating slow violence on the environment is not a neutral act. In the same way as translating written documentary evidence into another language, the role of translator and for whom it is translated come into question. If a translation is made to justify an act of violence by concealing damage, the translator is complicit in the act. Although overused as a term, criticality remains crucial. To be more precise, Weizman, who leads Forensic Architecture, explains that the forensic derives from the Latin word “forens”, and it means “pertaining to the forum”.⁷ In other words, “forensic” designates the openness for a forum, and public scrutiny, rather than a visual persuasion. Translating environmental data into visual or sonic experiences can be made for the purpose of concealing damage. Similar to raising the safety level of radiation in the atmosphere and making the citizens believe they are safe, translation can be made through the interpretation of data and editing data for visual persuasion. Because of such risks for distortions, Weizman’s etymological elaboration is important. Through a forensic activity as a forum, intended for the public good, the data is experienced visually, spatially, or sonically in the above examples. Through the experiential mode of knowing, the public as an audience of the works can begin to have a sense of slow violence on the environment. Through translation, the violence is made into experiential knowledge that can be reflected upon, instead of given to them as an unquestionable and authorial piece of ideology or to put it more simply as a form of greenwashing.

Initially formed as a response to the nuclear meltdown in Fukushima in March 2011, Safecast is an organization with contributions from volunteers from anywhere on the globe. Safecast provides a platform on which environmental data is collected and citizen science is encouraged to monitor the authorial provision of data from established laboratories and governmental authorities. Safecast has manufactured its own Geiger counter and encouraged volunteers to measure and monitor their own

⁶ Heather Houser, *Infowhelm: Environmental Art and Literature in an Age of Data* (New York: Columbia University Press, 2020), 48–54.

⁷ Weizman, *Forensic Architecture*, 65.

environment. From a trained scientist's point of view, the accuracy of measurement, and methods of measurement, made by amateurs may appear questionable. Trained scientists and engineers may object to the ways in which non-trained citizens can begin to claim their own data against the officially published data on which policies and political decisions are made. Even when citizens trust science and experts who measure and monitor data, they may be suspicious of the ways in which authorities interpret data. In the case of the Fukushima nuclear meltdown in 2011, the government's safety recommendations and the energy company TEPCO's defense for their governance and management of the power plants were seen as suspicious. Despite the rigorous training of physicists, skepticism remains among the public due to the possibility of politically biased interpretations of data by authorities. As a response, Safecast provides a model for citizen scientists to produce their own data and their own monitoring channels in order for anyone to understand their own environment in addition to the officially published data. Safecast's activities are focused on the aspect of parallel production of data to the official production of data. According to them, often the data produced by citizen science is seen as inferior to the official data.⁸ Yet, the strength of their data lies in its openness of process in collecting data, and the data is available and accessible to anyone. In other words, from collection to access, the data remains as the commons. It does not become a commodity as in data mining but remains available for anyone to monitor and respond to their environment. Equally importantly, Safecast does not only function to provide data, but it suggests a model for building genuine connections among volunteers and communities through their concerns. Among the network of users who are interested in investigating and finding creative solutions, trust is a prominent quality when producing and interpreting data. Especially when dealing with radiation levels, it is notable that Safecast remains non-partisan, in order to protect the neutrality of data. If taken either a pro or anti-nuclear position, the data can be immediately seen as biased by the opposing political position.

Environmental data is usually understood as a numerical register of the environmental condition generated through sensing devices. What if to bracket the aspect of numericity, and instead focus on the sensing apparatus? I am thinking about two different sensing devices: photography and the human body. A digital camera captures a scene in front of it through sensors while an analog camera receives light into the lens and records the light on film. Either way, the recorded image is a translation of the spatial configurations and the atmosphere in front of the camera. Whether it is an image of a tree or a blank wall, the resulting image is a record of the atmospheric environment in which the camera is placed. This is still applicable even when a telescopic lens is used as long as we understand the camera is recording the atmosphere even when focusing on a recognizable figure such as a tree or a person in distance. In this sense, from the early days of photography, even before the official invention of

⁸ Azby Brown, Pieter Franken, Sean Bonner, Nick Dolezal, and Joe Moross, "Safecast: Successful Citizen-Science for Radiation Measurement and Communication After Fukushima," *Journal of Radiological Protection* 36 (2016): 4.

photography in 1839, photography has been an apparatus of translating the environment through the act of recording the atmosphere. That is clearly evident in Joseph Nicéphore Niepce's *Views from the Window at Gras*, (circa 1826) in which the atmosphere was captured and translated into an image when the photographic apparatus was placed on Niepce's window sill. In a more recent example, Sophie Ristelhouber's 1991 photographs *Fait* show smoke, residues of bombing, in Kuwait during the Iraqi War. Reminiscent of perhaps the photographs of chlorine gas used in 1915 by the German army against its French counterpart, the viewer recognizes the clouds spreading at different locations on the ground.⁹ The clouds appear more tangible than atmospheric elements and dust. Instead, they look as if they are a form of sculpture, or to take on Forensic Architecture's comment on the clouds in a war as a form of architecture, we begin to understand how violence can be grasped as a voluminous form, yet again in Ristelhouber's photographic images, or for that matter, in the image of chlorine gas drifting in the atmosphere in 1915.¹⁰

Data Fiction

Though incapable of seeing radiation or even sensing toxic air, if understood as data, is the human body capable of translating slow violence? If exposed to chlorine gas, it does not take long to experience breathing difficulties. If trapped in a windowless container, again it does not take long to realize the lack of oxygen. Yet, the body is limited to detect slow violence. If the air is polluted or the groundwater is contaminated, the body that consumes it does not notice any damage for a long time. This is a frequent problem when mining causes contamination in the groundwater, and dust begins to harm the lungs. Yet, the human body that absorbs toxin can be a medium and data. By examining the body medically one can measure the level of intoxication. In this sense the body is data. The body absorbs and collects environmental violence like a slow sensor apparatus. Posterior to the symptom, the data can be collected and can be translated into a numerically organized system of knowledge. That is when the symptom is understood as a crisis. Yet, the body still requires numerical data to have understanding over the crisis of the body manifesting as a symptom.

Yet, data is not only produced for analyzing the condition of the body but also is used for predicting the progress of the illness. Considering the aspect of prediction, the artist Hito Steyerl in her video work entitled *Power Plants* (2019) used artificial intelligence to predict the next frame of the image. What the viewer sees is actually unfolding patterns of flower petals. As the viewer cannot verify if the unfolding movements of flower petals are correct, they see flowers swaying and moving randomly. In other words, how it will look a few seconds later into the future is predicted, or to be more accurately speaking, it is invented by artificial intelligence. According to James

⁹ Peter Sloterdijk, *Spheres Volume 3: Forms. Plural Spherology* (South Pasadena: Semiotext(e), 2016), 85–192.

¹⁰ See Forensic Architecture's video entitled *Cloud Studies*, 2020, <https://forensic-architecture.org/investigation/cloudstudies>, acc. on August 25, 2021.

Bridle, in 1947 John von Neumann and Vladimir Zworyskin presented a paper one after another in the American Meteorological Society.¹¹ “Von Neumann’s talk on ‘Future Uses of High Speed Computing Meteorology’ was followed by Zworykin’s ‘Discussion of the Possibility of Weather Control’”. Already, both conceived of computing data can be used for forecasting and knowing the changing weather: in other words, knowing and predicting the future. Bridle elucidates how weather forecasting is linked to the development of a military strategy to control outcomes of battles.¹² This point is suggested earlier in the writing of Peter Sloterdijk.¹³ The usefulness of weather forecasting is not only limited to planning in daily life such as taking an umbrella when leaving for work in the morning, or planning washing clothes and drying them outdoor but, it is essential for military operations. How does an army ensure the planned attack is effective? Sloterdijk recounts the event of the German army using Chlorine gas to poison the French counterpart in 1915.¹⁴ If the wind had carried the gas into their own direction, it would not have achieved the favorable outcome for them. In the same way, predicting and knowing the future is advantageous.

Beyond predicting the weather, today, data collection is made to speculate on and produce the future. Shoshana Zuboff is concerned with the deletion of uncertainty through the use of data for commercial purposes.¹⁵ Zuboff’s discussions are not limited to the use of environmental data, but also are extended to the larger reconfiguration of capitalism that is contingent on data as capital. For Zuboff, surveillance capitalism collects and deploys data to reduce chances and predict the future. Collecting and analyzing data lead towards speculation, prediction and production of future events. The production of the future may allow preparations for disasters, such as an early warning system for tsunamis and earthquakes. Yet, more importantly, speculating and producing the future can make the present to be led by the already speculated future scenarios. A precautionous response to the already known future will alter the present to the degree that it begins to determine the event that has not yet happened. Equally, environmental data is used for predicting what is to happen, instead of situating the human in the present. In this sense translating slow violence is equally about speculating the course of events in the future.

Environmental violence is describable as slow violence due to its slow manifestation. Translating environmental data not only elucidates translation as a process of mediating violence, but also through speculation, prediction, and production of the future, the temporality enters into the question of environmental data translation. Those who collect data can instrumentalize it to speculate, predict and produce the future. How do individuals and artists respond to this situation? As in Steyerl’s work,

¹¹ James Bridle, *New Dark Age: Technology and the End of the Future* (London: Verso, 2018), 26.

¹² *Ibid.*

¹³ Peter Sloterdijk, *Spheres Volume 3: Forms. Plural Spherology* (South Pasadena: Semiotext/e/, 2016), 85–192.

¹⁴ *Ibid.*, 85–192.

¹⁵ Shoshana Zuboff, *The Age of Surveillance Capitalism: The Fight for a Human Future at the New Frontier of Power* (London: Profile Books, 2019), 335.

an artist can illuminate the situation and present it to the audience. There is another option that artists can take, and that is to make their own critical predictions, speculations, and the production of the future, based on the data derived from the slow violence of environmental degradation. Similar to the ways in which Safecast celebrates citizen science, speculation and the production of the future do not have to be monopolized by globally operating and powerful technology businesses. In the domain of science fiction, there are visionary examples. What distinguishes these potential artworks from conventional science fiction writing and films is the use of data and translation. This production of the future based on data may be called data fiction, distinguished from science fiction. Yet, data fiction is not an imaginary future out of fantasies of a dystopian world or desires for a utopian world. Instead, it is to speculate how the slow violence of environmental destruction is imagined through data.

Violence is an experience and not a numerical register. Its destructive power inflicts pain on the victim. Yet, often, due to the slow mode of violence, a translation is required to make the imperceptible violence tangible and visible. In the process, data functions as a medium of projecting violence onto our knowledge. Data's capacity to allow prediction can be malicious, and mining and harvesting data can belittle individuals. Yet, artists can take this aspect differently from the ways in which data is deployed for profit-making, surveillance, or military advances. Instead of predicting and foreseeing the future in order to take advantage of others, artists can provide speculative futures in which a translation elucidates an indicator of potential scenarios to unfold. This is not the same as writing science fiction in the conventional sense, but reflecting on data to divert from a simulated scenario, to create alternative passages of the environmental future. Adorno understood that art would be a photographic negative of social reality, in the sense that art could illuminate the inherent social contradictions as a response to reality. Dissonance in artwork was Adorno's solution away from utopian imagination.¹⁶ When environmental data is translated to an aesthetic and affective experience, it can also be a falsely and ideologically constructed experience that emotionally moves the audience and convinces the audience. Here, the critical stance Adorno displayed in his writing against cultural experiences as a form of persuasion and indoctrination is relevant. Adorno's critical dejection and suspicion towards general cultural experiences during the Cold War era can be carried forward to our contemporary situations. Yet, art for Adorno was a response to the social contradictions taking place concurrently within artist's everyday social and political experiences. Different from the historical context in which Adorno was writing, contemporary artists need to take environmental questions more urgently. In order to do so, the artistic response to the situation needs to be made in more than real-time and to respond to the possible authorial scenarios based on data into the future. To begin this process, artists along with anyone can learn to monitor their environment instead of solely relying on data collected, analyzed, and interpreted by commercial enterprises or scientific or political authorities. As Forensic Architecture's

¹⁶ Adorno, *Aesthetic Theory*, 157.

and Safecast's examples point out, data should not be monopolized for exploitation or violence. By the same token data is not only a numerical register but a medium that can unsettle the predicted future and the subject's position in it. By grasping one's environment through one's own monitoring process, one can unsettle the predictable outcomes and respond to the simulated scenarios. Environmental data is not only a record of the current situation but is used for forecasting future scenarios. Because of this function, it can also produce the future that may be manipulated for the purposes of commercial, political, and military interests. Artists can reveal and illuminate the mechanisms of manipulations and control, and along with citizen scientists, they can monitor their environment, and cultivate alternative passages into the future.

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Article received: April 25, 2021

Article accepted: June 21, 2021

Original scholarly paper