Transductive Wind Music
Sharing the Danish Landscape with Wind Turbines

MARIE HØJLUND AND MORTEN RIIS

In this article the authors present their sound art project Nephew vs. Overheard as an exploration of a messy, fragile and incoherent local approach to public ecological art, an approach that aims at creating links of affectivity with technological creatures, such as large wind turbines, with which we share our landscape. Supplementing, as well as challenging, the dominant global strategy of ecological art, the authors argue that it is essential to experiment with transductive chains of local environmental data, creating sensibilities that we can relate to in our everyday environments.

NEPHEW VS. OVERHEARD

Denmark produces more of its electricity from wind power than anywhere else in the world. In 2015, Denmark produced almost half of its electricity from wind. Most Danes are proud of promoting Denmark as a green energy country, but, at the same time, many want to keep the wind turbines out of eye- and earshot. However, it seems that the country is simply too small to keep them in the background, and many argue that they make too much noise and their visual presence destroys nature views (Fig. 1). Therefore, new wind turbines often spark intense public debate in Danish media, focused on the aesthetic and sensorial implications of how the wind turbines change local environments [1].

Throughout 2018 an audience was invited to follow one of the world’s largest wind turbines live on a webpage. The project Nephew vs. Overheard was a collaboration between Nephew, one of the most popular Danish pop acts of the past two decades, and sound artist group The Overheard. On the webpage one could listen in real time to the wind turbine, whose massive wings cut through the wind at its location in northern Denmark at the Test Centre Østerild. The sounds from the windmill and the soundscape around it were mixed in real time with Nephew’s songs time-stretched by the tempo of the wing’s rotation [2]. On days with very little wind, even the shortest stroke on the snare drum was time-stretched to last several seconds. On windier days, the listener could sense the songs’ melody and text—all controlled by the rotation speed of the wind turbine. The original songs followed a traditional pop schema, with melodic chord progressions and a contemporary music production. Through the wind turbine rotation algorithm, the songs were transformed into dynamically evolving soundscapes following the changes of the wind and the seasons.

The central elements of the artistic staging were as follows: A network-controlled PTZ video camera located at a nearby service mast filmed the wind turbine from a 500-meter dis-
The video signal was sent to a local computer that ran the open source OBS Studio. A Bruel & Kjær stereo pair of microphones was placed approximately 20 meters from the wind turbine and picked up the local soundscape, including the rotation noise of the wings (Fig. 2). This audio signal was also fed into a computer, where it was processed through a custom Pure Data patch. Our real-time EBU R128 loudness algorithm [3] ensured a controlled but dynamic soundscape. The Pure Data patch ran a customized time stretch algorithm that processed the Nephew songs in real time [4] (Fig. 3). The stretch factor was controlled by the rotation data of the wind turbine. The faster the turbine was turning, the faster the song played—but the song would always play significantly slower than the original version, creating a blurring of the original pop song schema. The output of the time-stretched songs was mixed with the live soundscape through a side chain algorithm in which the frequency and dynamic content of the live soundscape affected the stretched songs (Fig. 4).

**TRANSDUCTION AND HABITUATION**

The existence of atmospheres in everyday experiences is often taken for granted and thus remains unnoticed. Yet, a growing number of scholars argue that atmospheres are vital to our everyday experiences of places and situations. The French sociologist Jean-Paul Thibaud states that we do not perceive atmospheres as such. Rather, we experience atmospheres as “a sensory background that specifies the conditions under which other phenomena emerge and appear” [5]. An atmosphere is not an abstract concept but a relational attunement where several elements are brought into responsive and dynamic relationship. These attunements thus become important zones open to intervention and manipulation as well as domination and control. James Ash and Anne Gallacher argue that taking the concept of attunement seriously encourages us to concentrate on relations between body and world as a process of material exchange and translation between a variety of human and nonhuman objects rather than an organization of forces by human perception or cognition. This requires a postphenomenological shift in our methodological imagination and the vocabularies we use to express that imaginary, in order to understand what it means to be attuned through exploring the translations of energies in between [6]. If we are to understand or design possibilities for reconfigurations of atmospheres, we must penetrate these conditioning intensities that give the phenomenologically given its extensive quality.

Fig. 2. Waterproof box containing microphones. (© The Overheard)

Fig. 3. Screenshot of Pure Data patch. (© The Overheard)
Zooming into the rhythms of the wind turbine, we explore what it means to be attuned by how the materiality of the wind turbine translates through other objects. It is impossible to ever catch a sound of a wind turbine in itself without its countless transductions. A transducer is a device that converts energy from one form to another. A windmill is a transducer that converts the energy of wind into rotational energy by means of the wings. Our ears and bodies are also transducers in a long chain of other transducers. These transductions are always inconsistent and flawed, and our own hearing is always a mishearing when sound is translated into our own listening experience shaped by our capacities and habits.

That said, our attuning capacities and habits are not fixed, as we constantly develop these throughout our lives. To Kirsten Jacobson, lived spatiality depends on these attuning relations as a way of finding things at a distance through making them affectively close to us. Through this gesture they are now presented to us as separated in their closeness, after which it becomes possible to distribute them to a specific region—e.g. as background. We are, she says, “daily brought to ourselves through the pieces of ourselves in the people, things and places” [7] through habituated practices that are also atmospheric. Many of these processes happen unnoticed through repeated everyday embodied habituations. But others happen when a sudden rupture to habitual actions creates a need to recalculate. The rupture acts as an attentional cue inviting us to consciously experience both the setting and ourselves as a closeness, after which repeated embodied habituation can result in refined attunement, where the ruptured can then move to the affective background. We have argued elsewhere that, to create such rupture, firstly we must capture the existing atmosphere to set the ground for a sense of shared attunement. Secondly, a rupture in the exiting attunement can be introduced through an object of affective attachment. This object of affective attachment is brought into being by getting close to the existing patterns of intensities between the different objects and actors involved. As a last step toward a new attuning relationship, the intensities can slowly transform to set the ground for rehabituation [8].

*Nephew vs. Overheard* therefore asks firstly if we can open a zone of attunement in relation to the wind turbine through an exploration of the fragile transductions—such as the sound produced by the wind and wings that is normally considered a waste product. These transductions act as ruptures where the oppressed background moves to the affective foreground. Secondly, the stretched songs of *Nephew* act to provide objects of affective attachment “inside” the existing attunement to facilitate a new habitation process. Lastly, this doing away with the distance between the wind turbine and ourselves allows turbines to exist for us as relevant distances—making them a part of the Danish landscape through slow habituation.

*Nephew vs. Overheard* was an invitation to a year-long habituation process for people to attune to whenever and wherever they wanted by offering a sedimented sensorium of a landscape as a condition for a new sense of familiarity with the wind turbine. The year of transductive wind music becomes an entity of such vast temporal and spatial dimension that it defeats traditional ideas about what a thing (artwork, song, design, etc.) is. Denmark’s summer of 2018 was one of its warmest and driest in a century and the summer with most sun hours since 1920. Normally the Danish summer is very instable and unsteady, with much rain. This broken seasonal rhythm became exposed and audible through the installation as the wind turbine stood still or rotated very slowly, causing the songs to almost stop (Fig. 5). Unexpectedly, the temporal break highlighted the inconsistency and fragility of the rhythms on which we think we can rely. It is said that last summer was what made the broad public understand the urgency of our current ecological crisis, because Danes could feel it through their bodies and senses. Seth Kim-Cohen makes an argument against working with the ambient in art through a disengagement with the world, e.g. in search for sound in itself. Instead, he proposes an approach to the ambient that engages discursively and thus is able to create ethical responses to our world [9]. Rather than integrating seamlessly with a listening environment, it unsettles it. And as we experienced with this project, the broken summer unsettled the atmosphere and called for reflection of our assumptions by proving a crack in the surface of the prevailing patterns of encounter, thus initiating new disruptions and discussions.

**STRATEGIES OF ECOLOGICAL ART**

Our global environment is under threat by global climate change [10]. However, this environment is most often in the dominant discourse of media and policy making, a reality somehow given independently of our everyday experiences and surroundings. This environment is known through
datasets translated into models, measurements and predictions, as most nonexperts are not able to understand raw data intuitively. However, the transformation of large data sets into various representations is not a neutral translation and most often includes a global perspective on the world. The datasets are often huge and shape our shared idea of what the world is—a world, anthropologist Tim Ingold argues, that we experience as ex-habitants and not in-habitants [11]. We feel responsible for this environment, but the global worldview represented in models is not a world where we feel we belong and can act. Thus, the dominant tendency of simply sharing more global scientific information has not effectively engaged and connected people to climate change in ways that facilitate understanding and encourage action.

In recent years the arts and humanities have engaged in taking on the important role of disrupting this dominant worldview that filters climate information and separate the public from the reality of climate change. Artists and researchers have started challenging both the idea that information is the only way we relate to the world and the dubious role of the artist as a PR worker for natural scientists to present data as authentically and purely as possible. Thus, they explore strategies beyond representation of data and toward reshaping the way we relate to the world. To give a few concrete examples of what strategies are proposed in order to facilitate a new way of relating to the world, Heather David and Etienne Turpin, for example, have suggested that we need a recalibration of the senses at the level of our global catastro-

phe in the introduction to the book Art in the Anthropocene [12]. Another example is Timothy Morton’s argument that we need to learn a new way to relate to “Hyperobjects,” such as climate change, by adjusting thinking to “Earth Magnitude” [13]. Similarly, Olafur Eliasson’s Ice Watch, wherein blocks of ice detached by global warming from the Greenland ice sheet are relocated to Copenhagen and Paris, seeks to present authentic testimonies of the dramatic effects of global climate change through “a direct and tangible experience of the reality of melting arctic ice” [14]. This recalibration of our senses and thinking to large scales and global perspectives can also be found in the broader public media. For example, the wind turbine company Ørsted’s “Love Your Home” campaign video, seen almost 19 million times, as well as its free children’s book Is This My Home?, both suggest that we all have to learn to think of the whole world as our everyday home [15]. Taken together, the examples share a global strategy building on two basic premises. Firstly, that an effective way to answer our current crisis is to learn to create emotional and affective bonds with dislocated—and to most people nonfamiliar—(hyper)objects (such as icebergs and snow leopards) through recalibrating our thinking to them. Secondly, that we can learn to care for an authentic global reality better through such globally attuned eco-art.

While we support the need for artists and researchers to respond to the climate crisis, we also want to argue that the strategy of recalibrating our thinking and senses to global scales includes a danger of alienation and passivity, similar to
the one felt when presented by global models and measurements. Tim Ingold proposes that this feeling of alienation and passivity is created because global strategy often lacks the sense of fragility and messiness that dominates everyday experiences of inhabitation [16]. In line with Ingold, Nephew vs. Overheard seeks to explore a local, messy and fragile strategy of inhabitation, engaging citizens in Denmark through affective attunement with their local environments through the lens of shared everyday atmospheres. The project presents rather than represents the wind turbine in its embeddedness in the material world of unexpected intensities and transductions. Thus, the premise of translation in our local strategy is not a matter of authenticity achieved through calibrating our thinking to a global scale. Rather, Nephew vs. Overheard should facilitate local and everyday bonds with the wind turbine by zooming into a chain of fragile and messy transductions.

Acknowledgments
The project was created by The Overheard and the band Nephew in collaboration with Siemens Gamesa Renewable Energy, CAVI and Audio Design at Aarhus University, DTU Wind Energy, Thisted Municipality and Daniel Rothmann.

References and Notes


4. The stretch algorithm is loosely based on the Paul Stretch algorithm developed by Paul Nasca. Nephew vs. Overheard also unfolded throughout Nephew’s universe around the release of the record “Ring-i-Ring” as well as in their concerts where the livestream from the wind turbine was used in both sound and visuals.


Manuscript received 8 January 2020.

MARIE HØJLUND is a sound artist, composer and assistant professor in sound studies at Aarhus University, Denmark. She received her PhD in 2017 with her thesis on sound, noise and atmospheres in Danish hospitals: “Overhearing—An Attuning Approach to Noise in Danish Hospitals.”

MORTEN RIIS is a sound artist and composer and holds a PhD in electronic music from Aarhus University. He has written articles and books on artistic research and music technology, conducted workshops over most of Europe and has received commissions from leading festivals and ensembles in Denmark, Germany and Poland.