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Making Energy Infrastructure: Tactical Oscillations and Cosmopolitics

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ABSTRACT *Integrating renewable energy sources into the power grid and ensuring public interest in energy is a key concern in many countries. What role may art play, and what political strategies do artists employ, in order to intervene in the infrastructuring of energy and public environments? As the case study here, a Copenhagen art and energy competition invited artists and designers from around the world to submit ideas for large-scale public artworks that can generate utility-scale renewable energy. The competition process had a smooth and consensus-seeking political strategy, manifested in a set of tactical oscillations. In order to engage with local stakeholders and ensure the success of the competition, the project managers oscillated between presenting the competition as part of existing policy initiatives and as posing alternatives to existing policy. They oscillated between being situated in a pragmatic present and in an unprecedented future; between being tied to the specific site of the competition and belonging to no place in particular; and not least between being predominantly an art project and primarily an infrastructure project. Remarkable differences between cosmopolitics and smooth politics appear here, especially compared to the literature analysing the roles played by art and design when imagining new ways of living with energy. Oscillation between smooth politics and cosmopolitics may provide a generative way forward for actors wishing to engage in the infrastructuring of environments.*

KEYWORDS: art, energy, infrastructure development, imagination, cosmopolitics

Introduction

Policy planners, engineers, and infrastructure developers in Denmark—and elsewhere—currently work to find alternatives to the existing energy system. The

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Danish energy and climate vision of becoming 100% powered by renewable energy in 2050 raises challenges around how to engage people in living differently with energy in a low-carbon future. As is described in the Guest Introduction to this special issue, infrastructures are often “seen as the *underlying basis* on top of, or through which, a society or an organization operate”. The current electricity infrastructure does indeed (mostly) operate as an invisible woodwork of society, which does not demand much awareness or engagement from everyday consumers or the general public (Bowker, 1995; Bowker and Star, 2000; Edwards, 2003).

However, the transition to renewable energy re-infrastructures environments in ways that make energy more visible and demand and/or generate/induce new types of public engagement and participation (Cotton and Devine-Wright, 2010; Hargreaves *et al.*, 2010; Schick, 2015). As wind turbines reshape landscapes, they often give rise to new, emerging publics—often in the shape of “protesting neighbors” (Walker and Cass, 2007; Batel and Devine-Wright, 2014; Chilvers and Pallett, 2015). New visions for smart grids, flexible energy consumption, and intelligent houses are re-infrastructuring home environments in ways which will presumably change the way we will consume energy in the future (Nyborg and Røpke, 2013; Strengers, 2013; Schick and Gad, 2015).

How to re-design current energy infrastructures is a highly contested issue among energy companies, engineers, IT providers and politicians. How to design processes for alternative energy futures? What types or degrees of alterity can enter into the discussions about the future? Elsewhere, we have shown how dealing with such issue happens in a space that is partly imaginative and partly limited by restrictions in the current energy system and the way it is institutionally and materially organized. It matters which actors participate in the process of re-infrastructuring environments (Schick and Winthereik, 2013).

In this article, we address the issue from the viewpoint of art and design; we analyse an attempt to create new imaginaries around energy and infrastructural design. Our central question is: What role may art play, and what political strategies do artists employ, in order to intervene in the infrastructuring of energy and public environments? We describe how art and design are introduced into a space where the infrastructures for energy production and distribution of the future are debated. We show how making headway in this crowded and contested space is not an easy task.

Analysing the implementation of a large, international ideas competition in Denmark, we explore how this competition both intervenes and fails to intervene in existing politics and publics around energy. We explore and discuss which specific political strategies this particular art project exercises in order to gain a foothold and ensure ascendancy among local actors. As we intend to show, art is more than an *addendum* to existing orientations of how to design a sustainable energy future. Instead, art and design potentially interfere with dominant expectations as to what the future will look like and thereby offers the possibility of imagining new worlds.

To give a bit of empirical background, Land Art Generator Initiative (LAGI) is a biannual competition that, since 2010, has invited artists, designers, engineers, architects, and others to submit ideas for “large-scale, site-specific, public artworks” with “the ability to harness energy cleanly from nature and convert it into electricity for the utility grid” (LAGI, 2014a). As indicated by the slogan “Renewable Energy Can Be Beautiful”, LAGI seeks to demonstrate that energy infrastructures can be visible, attractive, and engaging. LAGI proposes to let energy production move into urban areas where people can appreciate energy and green transitions in new ways. In 2010, the competition took place in Dubai and Abu Dhabi. In 2012, it was based in New York. In 2016 it will be situated in Los Angeles. This paper focuses on LAGI 2014, held in Copenhagen.

More specifically, the analysis centres on the implementation of the competition and identifies a set of tactics and political strategies deployed by the project team to mobilize public and political actors. In particular, we draw attention to several forms of *tactical oscillation* deployed by the project in order to gain support, procure funding, and create visibility for its ideas. By tactical oscillations, we refer to modes of performing the qualities and characteristics of LAGI 2014, which repeatedly changed depending on circumstances and audiences. We show how the project oscillated between presenting itself as part of existing policy initiatives and as posing alternatives to them; between being situated in a pragmatic present and in an unprecedented future; between being tied to the specific site of the competition and belonging to no place in particular; and not least between being predominantly an art project and primarily an infrastructure project.

Recognizing these oscillations, we suggest, is crucial in order to come to terms with the often invisible and highly political work that goes into practices of infrastructuring environments. Taking seriously oscillations as a political strategy elicits particular modes of performing alternatives to the current energy system that seek impact without being in any way controversial. We describe the oscillating tactics as a smooth and consensus-seeking political strategy. We end the article by discussing how the politics and strategies for intervention of this specific case differ from other art projects.

What is offered through this analysis is a conceptualization of the potential role played by art and design in opening up the public and political imagination around energy infrastructures. We begin with a short review of existing literature concerned with the role of art and design in relation to environmental issues and infrastructure transitions.

Analytical framework: art and infrastructures

How to turn energy infrastructures into issues around which the public can gather and new politics emerge? This question has caught the interest of social scientists who explore the role of art and design in the process of publicizing infrastructures. Adaptation practices is a term generally used to cover artworks which, like LAGI,

use architecture, design, and engineering to propose alternative ways of living with climate change (Yusoff and Gabrys, 2011). Of particular interest for the present paper are designs that focus on visualizing and problematizing energy.¹ These kinds of experiments have recently inspired STS researchers to explore the relationship between infrastructure, arts, and politics. Shared among this emerging literature is the notion that artworks and creative practices can help social scientists articulate and analyse complex issues related to energy infrastructures. Due to their capacity to articulate and problematize the effects of modern lifestyles and modes of consumption, artworks are thus relevant for environmental politics.

A number of recent contributions are particularly relevant for the present paper. In her analysis of the implementation of the artwork *Nuage Vert* (2008/2009 by the artist duo HeHe), sociologist Noortje Marres (2013) views the art project as an apparatus for studying society, energy, and environmental politics.² She argues that *Nuage Vert* makes visible “a particular set of controversial entanglements” and thereby “enables the explication of concerns and controversies beyond what is already observable in relevant settings” (2013, p. 6). As Marres has argued elsewhere (2012), when issues and controversies are visualized and materialized, they may become issues of concern to publics emerging around them. Thus, explicating controversies and issues artworks may facilitate new forms of participation and intervention or, said differently, may be generative of new modes of environmental politics.

In their recent paper *Technifying Public Space and Publicizing Infrastructures* (2013), cultural sociologist Fernando Domínguez Rubio and architect Uriel Fogué argue that designers and architects should help making otherwise invisible infrastructures aesthetically present in public space. Analysing an installation proposal for a public square in Spain—a proposal resembling the site-specific public artworks generated through LAGI—the authors argue that exhibiting infrastructures and their workings can generate new relations to energy and environmental issues. They further argue that it is important to design infrastructures in ways that convey the political issues and controversies embedded in them. This can, they argue, “open up the possibility of new forms of civic participation and engagement” (Domínguez Rubio and Fogué, 2013, p. 1035). Inspired by science philosopher Bruno Latour—and much in line with Noortje Marres’ argument—Domínguez Rubio and Fogué see such efforts to imagine and redesign public spaces as ways of making energy infrastructures into public and political “matters of concern” (Latour, 2004; Domínguez Rubio and Fogué, 2013).

Jennifer Gabrys (2014) is equally concerned with the politics that artists working with energy may enable. Analysing three artworks (including *Nuage Vert*), she argues that art may help articulate new modes of environmental citizenship and what she terms “a cosmopolitics of energy”. Drawing on the Belgian philosopher of science Isabelle Stengers’ notion of “cosmopolitics” as an approach for “slowing down reasoning” (2005, 2010), Gabrys argues that artworks have the capacity to operate as “hesitating practices”. Questioning dominant visions

for “what must be done”, Gabrys argues, that artworks create a space for hesitation that might help the social scientist as well as other scientists and people in general to engage with energy matters in more speculative registers. In doing so, they create new arrangements of environmental practice and participation, which might, she argues, pave the way for a “cosmopolitics of energy”.

The basic cosmopolitical tenet is that we do not yet know of what the world consists. This entails the obligation to remain open to its emergent or unexpected dimensions. More than anything, this entails giving up on conventional certainties about the right way to proceed, for example, when designing for alternative ways of producing and consuming energy (for other uses of cosmopolitics in the intersection of art, design, and energy, see also Bergström *et al.*, 2009; Michael and Gaver, 2009; Michael, 2012). Instead, cosmopolitics is about bringing to light hidden voices, forgotten actors, or different modes of seeing and feeling. Just as important, however, is the obligation to present such unrecognized modes of being *in full force*—that is, as invested with the capacity to transform strongly held convictions and forms of action, rather than as minor curiosities that might be ignored once technical or economic elements are brought into play (Jensen, 2011; Stengers, 2011).

Implicitly in the “cosmopolitical proposal” lies a normative commitment to question and seek alternatives to hegemonic and naturalized knowledge and politics. Whereas this normative stand is certainly present in Stengers’ philosophy, it is translated by social scientists to be applied in a much more practical sense in relation to art and more speculative registers of design (see e.g. Mazé and Redström, 2008; Latour, 2011; Michael, 2012; Gabrys, 2014). For example, in a recent *Science as Culture* paper, Gabrys and Yusoff engage with Stengers’ philosophy; they argue that art may “create an opportunity to arouse a slightly different awareness of the problems and situations mobilizing us” (Stengers, 2005, p. 994, in Gabrys and Yusoff, 2012, p. 2). Therefore, art can give “tangible form to the imagination of different worlds outside of the constraints of the given present” (Yusoff and Gabrys, 2011, p. 3).

The founding co-directors of LAGI were explicit that their art project challenges how energy production can happen, and they propose new ways of living with and recognizing energy in urban settings. In order to convey the artistic character of LAGI, the directors categorize their project as “art as social practice” (Personal Communication, 1 December 2014). In general terms, socially engaged art refers to art that actively intervenes in the world outside the art institutions and aims to work as agents for social and political change (Bishop, 2012; Schwarzbart and Samson, 2014). LAGI, too, aimed to engage the general public in issues concerning renewable energy. Indeed, the directors hoped that it would “truly affect public opinion that could in turn influence public policy” (Monoian and Ferry, 2012).

In the following, we explore how the LAGI 2014 project sought to make an alternative vision of the future come to life. We describe what came out of it, and relating to the literature above we will discuss cosmopolitical potentials

and limitations of the project in relation to its political and public impact. This concern necessarily takes us beyond an interest in how LAGI framed its own concerns, for the project also needed to take into account the concerns of numerous other actors, including policy-makers and urban developers. In the main part of the paper, we offer detailed examination of this process by eliciting the oscillating tactics, as described above.

Methodological considerations

Our involvement with LAGI 2014 has gone considerably beyond classical ethnographic engagement, where social life is being studied through participation in and observations of work and everyday life (O'Reilly, 2011, p. 3). Indeed, as described in the following section, first author brought the competition to Copenhagen and took on the role as local project manager during nine months in 2013 to 2014. LAGI 2014 was hosted by the IT University of Copenhagen as part of the strategic research area energy futures, in which both authors take part.

Project management entailed close collaboration with the LAGI directors and relied on assistance from a number of other research institutions.³ For this reason the material presented is to a significant extent auto-ethnographic. The empirical material on which the paper draws consists of notes from meetings, emails, phone conversations, and documents, all of which were compiled over the roughly one-year period during which the project was planned and implemented. In addition, the analysis draws on material from earlier competitions, on personal impressions from the exhibition, and on media coverage.

The fact that an insider collected these materials raises obvious methodological questions. For one thing, the conventional and useful ethnographic tool of estrangement was not available during the time of the project. Rather, the process of achieving adequate distance from project realities had to happen by working through the empirical material with friends, colleagues, and supervisors upon return to the PhD position. Aside from this temporal process, first author attempted to strategically detach from the project in its final phase, in order to maintain a reflexive perspective (for strategic detachment from a project see, Zuiderent, 2002; Zuiderent-Jerak and Jensen, 2007). Conversations with fellow researchers were important in this regard, as was the participation in a public debate event,⁴ and the contextualizing work of organizing an academic symposium.⁵ In both of these events, LAGI figured as one of several ways in which alternative energy futures might be represented through art.

What is the LAGI?

Imagine yourself walking in a large park at the edge of the city. In the distance, an object appears to rise organically from the landscape. Its armatures and folds relate to the composition of the setting. Looking closer, the large

object makes you think of the complexity of patterns that exist in the natural world while at the same time it inspires an awe of human invention and ingenuity. The geometries of the sculptural elements seem to respond to the sun and the wind. When you reach the observation platform the vision comes into perfect form, like a painting in a frame. As you watch the way that it reacts to the forces of nature, you think about the interconnectedness of human activity with the earth and the delicacy of our shared ecosystem. You are surprised to learn that the beautiful object that has so captured your attention is also a power plant harnessing the energy of nature in the creation of carbon-free megawatt-hours that are at that very moment providing electricity to thousands of nearby homes. You stay for a while listening to the energy conservation discussion that is going on there that day, stealing glances toward the artwork as it moves to follow the sun. (Koh, Monoian and Ferry, 2012)

This excerpt is taken from the catalogue of the first LAGI competition. The reader is guided into a future landscape where clean energy is produced by large art sculptures “beautifully and seamlessly integrated into the fabric of our biotic and cultural ecosystems” (Koh, Monoian and Ferry, 2012).

LAGI was founded in 2008 by the artist Elizabeth Monoian and the architect Robert Ferry. Initiating the project, Monoian and Ferry wanted to combine their expertise in a “solution-based art project”, which could contribute to the transition to a more sustainable future (Monoian and Ferry, n.d.). Inspired by Land Art, an art tradition emerging in the 1960s that centred on making gigantic site-specific designs out of nature, they decided to add modern technology into the mix. Doing so, they envisioned a form of ecological Land Art with the added function of producing clean energy (Ferry, ITU presentation 2014). Aiming for global impact, the directors further decided that:

the best way to approach this was not just the two of us sitting down and designing one public artwork that generated utility-scale energy, but to put this out as a call internationally, bringing the minds of creative individuals, engineers, scientists etc. together and have a really huge collective idea of what this could mean. (Monoian and Ferry, 2014c)

So far LAGI has been successful in attracting participants. The first three competitions—in Dubai/Abu Dhabi 2010, NYC 2012, and Copenhagen 2014—together have generated more than 700 submissions from over 50 different countries. Among the submissions are sculptures like *Light Sanctuary* (2010), a gigantic labyrinth made out of organic photovoltaic cells, generating energy for around 1,000 households. Or *Solar Loop* (2012), a large mirror-plated Möbius strip, which reflects its surroundings, functions as an outdoor concert hall and produces solar energy for approximately 2,000 households. Or *Sound of Denmark* (2014), a



Figure 1. Pictures from LAGI 2010, 2012, and 2014.

design in which huge Viking horns integrated with wind turbines simultaneously produces clean energy and urban soundscapes (Figure 1).

Upon receiving submissions, an international and interdisciplinary jury evaluates the ideas and elects a winner, who gets a monetary prize of \$15,000. The short-listed selection of ideas is exhibited to the public,⁶ while a larger selection is published in a coffee table book along with essays on art and energy (Koh, Monoian and Ferry, 2012; Klein *et al.*, 2013; Monoian and Ferry, 2014a). Finally, all submissions are publically available in an online portfolio.⁷ The LAGI directors hope that the project will lead to construction of some of the designs, but the competition centres on ideas and whatever happens subsequently is a different matter. Until this point no actual sculptures have been made.⁸

In some sense, the very form of LAGI—a competition—makes it untraditional as an art project. To be sure, it bears resemblance to conventional architecture and art competitions. In contrast with such competitions, however, LAGI's purpose is neither to find a winner nor to construct the proposed design. Instead, Robert Ferry insists that “the power of the competition model is that it allows people to be playful, innovative and creative without the binds of a specific client” (Monoian and Ferry, 2014c).

For a design proposal to be strong, it needs to contain the idea for a sculpture that is aesthetically interesting, conceptually challenging while also using technology innovatively. Moreover, the proposal should synthesize the demands of imaginative art and a functioning power plant. Thus, the design should be capable of producing a fair amount of energy with a reasonable return on investment (LAGI, 2014b). Located somewhere between art and renewable energy innovation, LAGI is thus a hybrid project.

Entering Copenhagen

In Denmark, the Nature Agency, operating under the Ministry of Environment, holds responsibility for the location of onshore wind turbines. An important dimension of its work is to facilitate dialogue and ensure the support of local populations neighbouring new wind turbines.⁹ This work provides a way of dealing with the so-called NIMBY (Not In My BackYard) problem (Batel and Devine-Wright, 2014; Walker *et al.*, 2010).

In spite of a general support of renewable energy in Denmark, the process of finding locations for the increasing amount of large wind turbines is often turbulent. In 2012, the Nature Agency thus began imagining different approaches. Among other things, they envisioned a project in which a famous Danish artist would decorate the turbines to ensure that the turbines were aesthetically appealing (Personal Meeting, Nature Agency, April 2013).¹⁰

Already familiar with LAGI, first author contacted the Nature Agency who immediately took interest in the idea of inviting the directors to Denmark. In October 2012, an initial workshop was held with LAGI and the Nature Agency. The workshop led to first author's assignment as project manager and to the Minister of Environment taking on the role as the ambassador of LAGI 2014.

Despite its small size (three full-time employees), LAGI 2014 proved very successful in mobilizing support from politicians and key decision-makers in Denmark. Besides the Minister of Environment, also the Minister of Energy, Climate and Building participated in the project writing a text for the Design Guidelines (LAGI, 2014b, p. 3). The jury included the Head of the Danish Energy Association, the City Architect, a major, and the European Commissioner for Climate Action, Connie Hedegaard, who furthermore opened the final exhibition with the following words:

In order to address this [global warming and a rising number of people on the planet demanding a good life] we really have to think across the traditional silos. We have to find crosscutting solutions. That is always extremely difficult—be it in a municipality, in a government, in an administration, in a business—to think across different silos is one of the most challenging things. (Hedegaard, 2014)

In her speech, the Commissioner praised LAGI for innovatively thinking and acting across arts, culture, and public involvement on the one hand and engineering and environmental infrastructure planning on the other. Indeed, the project's hybrid character as both art and infrastructure innovation proved to be the key in mobilizing support. The main sponsor of LAGI 2014, Capital Region, a publicly owned administrative organization covering 29 municipalities including Copenhagen, was enthusiastic about funding LAGI 2014 because they saw the project as providing a welcomed opportunity to traverse two separated focus areas in the organization.

As in most public administrations, the area of culture and arts is, in the Capital Region, handled by one department, while issues concerning climate, energy, environment, and infrastructure planning are located elsewhere. At the first meeting between the LAGI 2014 team and Capital Region, it was made clear that the latter had long discussed the need for projects that would more closely connect climate issues and environmental initiatives with issues pertaining to public involvement, culture, and arts.

Seeing in LAGI 2014 an opportunity to challenge its own funding structures, Capital Region intended to fund the project from two sources: the environment funds and the event funds. Capital Region also made explicit that effecting such joint funding would likely be quite challenging (meeting, Capital Region, June 2013). The innovative ambition to develop co-funding scheme did indeed found on practical difficulties and eventually the project was exclusively funded by the department of culture.

The process of bringing LAGI to Denmark made explicit a hitherto unarticulated interest in projects that could act across silos, bring together conventional disciplines, and make the public interested and engaged in environmental infrastructures.

Established practices and innovative intervention

Riding on the back of this initial success in opening the doors to the Capital Region, the LAGI project team asked Martin Lidegaard, the former Minister of Climate, Energy and Building, to write a text for the Design Guidelines. In the text, Lidegaard offers his praise to the innovative way in which the project approached the complex matter of a green societal transition. Lidegaard emphasized the importance of “challenging conventions” and “thinking outside of the box”. However, it showed to be equally important to not challenge certain conventions and to settle within certain boxes. This makes a case for LAGI’s oscillatory movements in and outside the established sentiments of what counted as important in Danish environmental politics.

At the initial workshop with the Nature Agency in 2012, as well as subsequently, materials (books, webpage, and powerpoint presentations) from the competitions of previous years worked amazingly well to attract interest from decision-makers. These materials presented spectacular and quite alien, artistic sculptures from apparently distant futures (and far-away places like Dubai and New York). Even so, they held apparent appeal. A few months later, when the Nature Agency arranged a workshop aiming to rethink renewable energy with the assistance of the “creative disciplines”, it used pictures from previous LAGI competitions as inspiration material (workshop at Danish Architecture Centre, April 2013).

Though the Nature Agency shared an interest in the relation between art and renewable energy, the collaboration with them depended upon the LAGI 2014 team connecting and weaving the objectives of LAGI 2014 closely together with the Agency’s existing policy work and established practices. As project manager first author was asked to read through existing strategy documents and sketch out how LAGI 2014 would support these strategies. Besides being an innovative art project providing alternative ideas for future energy production, LAGI 2014 also had to define itself as part of and as addition to the policy practices. As this process of alignment suggests, LAGI 2014 was never just an art project. As far

as the Nature Agency was concerned, it related directly to questions of how to plan, design, implement, and manage future energy infrastructures in Danish environments.

For LAGI, however, this hybridity was not objectionable. After all, the criteria for successful design proposals went beyond an interest in beautiful sculptures, demanding details about the kind of renewable energy technology used, the amount of electricity to be produced, and estimations of returns on investment. Further, LAGI proposals also included descriptions of the utilization of public involvement and the creation of recreational areas, and formulation of an environmental assessment. Since these multiple practical requirements were already part of LAGI's script (Akrich, 1992), it was neither inherently problematic nor overly difficult to demonstrate that the project shared plans and visions with the Nature Agency.

Moreover, the LAGI directors were very careful not to perform the project as challenging in any sense that could be interpreted as *oppositional* to the exiting Danish politics. During a presentation, for example, first author suggested that LAGI 2014 would involve the public in a better way than the regular citizen involvement initiatives proposed by the Nature Agency. At this point, she was corrected by the directors, who pointed out that there was no need to present LAGI 2014 as an opposition to other ongoing initiatives rather the project should instead be presented as an addition to the existing approaches. Making LAGI 2014 come to life in Denmark thus became a matter of staying friends with everybody; of performing the project as part of unfolding activities, though still offering its own creative twist.

Yet, the fact that LAGI was envisioned as a combination of art and infrastructure innovation from the get-go eased this obligation. The hybridity of the project made it possible to oscillate between the modes of existence adequate to art on the one hand and policy-making around infrastructure development on the other hand without turning their contrasts into confrontations. Politicians and decision-makers could be mobilized, that is, because of LAGI's in-built flexibility, which allowed it to perform at once as an innocuous addition and as an innovative alternative to existing frameworks for infrastructuring environments.

Oscillations in time and space

In order to make site-specific land art one needs a piece of land to design for and build on. After the desert of Dubai/Abu Dhabi and the old landfill at Staten Island, NYC, next stop for LAGI was Refshaleøen, an abandoned shipyard at the centre of Copenhagen. Refshaleøen is located just across the harbour from where the most famous tourist magnet of the city, the statue of the Little Mermaid, sits. The fact that the island is the backdrop to Denmark's number one tourist attraction combined with the interesting story of the old shipyard itself generated what the LAGI founders called a "site with a wow-effect" (Elizabeth Monoian, Meeting



Cover page of Design Guidelines LAGI2014

Refshaleøen in Design Guidelines LAGI2014

Figure 2. Cover of design guidelines and pictures of Refshaleøen.

at Refshaleøen Holding, May 2013). It was a place which would be interesting for the participants of the competition to design for (Figure 2).

Aside from its geographical appeal, however, Refshaleøen also appeared to be perfectly placed in another way, as it seemed to be situated right in-between the past, the present, and the future. The LAGI 2014 Design Guidelines described the island in the following way:

Refshaleøen is a manmade island in Copenhagen’s harbour, which until 1996 housed the shipyard Burmeister & Wain. At its height, the shipyard employed 8,000 people—an icon of Danish industrial history. ... Today the many shipyard workers have been replaced with a mixture of creative entrepreneurships, small crafts facilities, flea markets, warehouses, and cultural and recreational venues. (LAGI, 2014b, Design Guidelines, p. 5)

After the shipyard closed in 1996, ownership was transferred to four pension funds that hoped to turn the island into an integral residential and commercial part of the city. This has yet to be approved by Copenhagen Municipality, who decides which parts of the city can be developed and when. Due to many other development projects and due to lacking infrastructure, Refshaleøen is defined as a “prospective area” where no permanent construction can be built before 2023 when the

municipality will again consider the destiny of the area (Copenhagen Municipality, 2014).

During this period, the administrative company Refshaleøen Holding has been employed by the pension funds to take care of the premises and to create positive attention around the island. The strategy was and still is to attract creative people and host events that will make visible the island as a living cultural centre in the minds of Copenhageners and their politicians. Another part of the strategy is to make Refshaleøen CO₂ neutral by 2020, five years earlier than the goal of Copenhagen city (Copenhagen Municipality, 2014).

Offering pictures and descriptions of Refshaleøen, the design guidelines asked for submission of ideas: “well informed by a thorough understanding of the history, geography, details of the design site, and the broader contexts of Refshaleøen, Copenhagen, and Denmark” (LAGI, 2014b). Out of the 300 ideas eventually submitted, many were inspired by Danish maritime culture and by the transition from an industrial and polluted past to a green, clean future. As well, amidst other of Hans Christian Andersen’s fairytale figures, the Little Mermaid made an appearance in many sculptures. Various proposals also translated Danish Viking history and the popular biking culture into renewable energy (Figure 3).

Displaying images of futuristic, energy-generating sculptures, manipulated into (pictures of) Refshaleøen, LAGI 2014 participated in the enactment of an appealing future for the island. In turn, this provided assistance to the efforts Refshaleøen Holding puts into making sure that the future politicians will not dispel such an attractive future. At one meeting, a representative from Refshaleøen Holding expressed how Refshaleøen was situated in time:

If you place it at Islands Brygge [an already very hip area in the centre of Copenhagen] you place it in the present, if you place it at Refshaleøen, you place it in the future. (Meeting at Refshaleøen, August 2013)

According to this description, Refshaleøen resides in the future. But this future does not simply reside in the future, for obviously it is enacted *now* (Adam and Groves, 2007). Yet, it is also tied, via the emphasis on Danish history in general, and the history of the island specifically, to the past. Refshaleøen thus

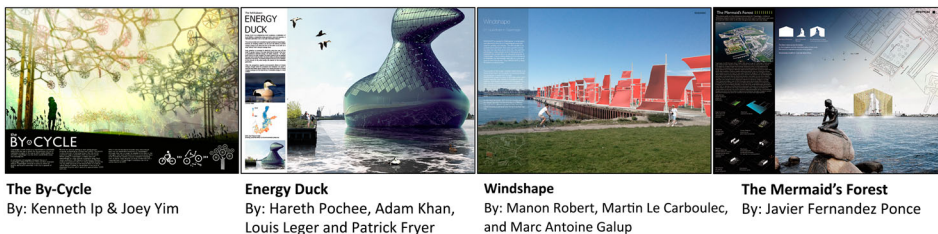


Figure 3. Pictures of four LAGI 2014 submissions.

appears as something of a temporal black hole in which the past, present, and future oscillate and coexist.

Here we find a curious analogy, for something very similar might be said about LAGI 2014. Obviously, as an ideas competition, the project excelled at imagining futures. Many of these envisioned futures were rather different from the city spaces and forms of energy generation of the present.

Yet, the LAGI directors constantly emphasized the possibility that the sculptures might be constructed in the very near future. Certainly they would *like* the designs to actualize, which is why the design criteria urged submissions to “be pragmatic and constructible and employ technology that can be scalable and tested” (LAGI, 2014b, Design Guidelines, p. 7). The outcomes were thus meant to be ideas that creatively conflate the distant future with the (almost) doable now. Not only time but also spaces were conflated in the process of implementing LAGI 2014 in Denmark.

The outcomes of LAGI 2014 were ideas for site-specific artworks made specifically for Refshaleøen. Yet, though the LAGI founders were very particular about its site-specific character, they also tended to link the particularities of location to abstract space—an everywhere. “The 2014 site at Refshaleøen is an industrial brownfield site. Its history is unique, but every city has a site similar to this” (Monoian and Ferry, 2014b).

Connecting Refshaleøen to other brownfield sites in cities around the world, the LAGI directors suggested that sculptures designed for Refshaleøen could potentially be built everywhere. In this way, they wrote the project site into a global trend, where post-industrial areas are repurposed as modern residential living spaces. Often such urban renewal projects strive to convert a polluted, industrial past into a green and clean sustainable future (see i.e. Blok, 2013; Braae, 2015).

Within this narrative, Refshaleøen played a double role. It functioned as the specific site for design while also offering a display window for sculptures that might be modified, rescaled, and built “anywhere”. Indeed, the directors hoped that the books and online portfolio of submissions would function as both catalogues and catalysts for site-owners around the world interested in building a Land Art Generator. And this does indeed seem to be happening, at least on a small scale. Thus, one of the 2010 Abu Dhabi/Dubai submissions is currently being redesigned to fit to a city square in Pittsburgh, USA.

Making LAGI 2014 into a both site-specific and a multiple-sited project also came to be necessary in a Danish context. In order to gain the necessary financial support LAGI 2014 had to stretch beyond the capital. This related to the fact that the main sponsor, Capital Region, comprises not only the city of Copenhagen but also 29 other municipalities; a situation that made it politically difficult to sponsor a project that might be seen to cater exclusively to people in the city centre. Living up to the demands of the region thus obliged the project to show that it was *not* site specific, but instead regional. In practical terms, this problem was solved making partnerships with two other municipalities within the Capital Region. For these

partnerships, the project used local sites—an old gravel pit and a piece of land stretching along a main road—as secondary sites for the competition.¹¹ In addition to the main competition, participants were thus invited to submit modifications of their designs, showing how they would fit these secondary sites. Additionally a smaller prize was given to the best of these modified designs.

Similar to the movements between established practices and innovative intervention described in the previous section, LAGI 2014's hybrid character furthermore allowed it to be performed in a smooth choreography of time and space. Without necessary contradiction, the project managed to inhabit both present and future and to reside both specifically on Refshaleøen and simultaneously in many other places around Denmark and globally. In doing so, the project tactically mobilized the necessary support and thus came into being.

Ending the analytical section we will show how LAGI 2014 furthermore managed to oscillate between different agendas and thus created a space where somewhat conflicting agendas could temporarily coexist. As will be described in the following, this was an effect of LAGI 2014 having to fit into a landscape already inhabited by actors with conflicting concerns and agendas.

Oscillating agendas

The project's ability to support multiple and sometimes conflicting agendas became particularly visible in its collaboration with the Refshaleøen Holding. At a meeting, our contact person made clear their incentive for hosting the competition:

Partnering with LAGI is not only a matter of supporting a green and creative project. At the end of the day, it is a pragmatic and economic matter of raising the value of the property. (Employee at Refshaleøen Holding, meeting, May 2013)

Refshaleøen Holding thus saw LAGI 2014 as a generative instrument for ensuring future support for city development. They hoped that LAGI 2014 would generate a lot of positive media attention, just as LAGI 2014's support from key decision-makers such as the City Architect was undoubtedly of importance to Refshaleøen Holding. Often described as “gentrification”, the strategy of using artists and the so-called creative class as temporary instruments for turning run-down urban areas into prosperous and trendy city parts has been criticized in Copenhagen (Christensen, 2015) and around the world (Florida, 2004; Oswalt *et al.*, 2013). Indeed, this strategy was widely discussed by the artists working at Refshaleøen, who were worried that their own creative practices at Refshaleøen as well as the LAGI 2014 project would eventually lead to city development making the area too expensive for them to live in. For the artists as well as for one of the LAGI

2014 collaborators, a city planner from the Copenhagen Municipality, the hopes were that Refshaleøen could remain an artistic and unpolished space in-between. At a meeting in the Copenhagen Municipality, the city planner, who was responsible for the development at Refshaleøen, explained that he was in support of LAGI 2014 exactly for the opposite reason than Refshaleøen Holding. He saw LAGI 2014 as an opportunity to construct a sculpture that could help turn the place into an inspirational area for recreation, which neither politicians nor citizen would subsequently want to ruin by supporting more polished kinds of urban development (meeting at Copenhagen Municipality, May 2013). Seeking the approval of this professional, however, did not prevent LAGI 2014 from simultaneously serving as a tool for the very development he opposed. In regard to the inevitable close relationship between art and economy, the LAGI directors did not consider supporting the economic strategy of the pension funds a problem (LAGI 2014 team meeting, November 2013).

This manifested further in a downloadable pamphlet entitled “Benefits to Cities”, which the LAGI founders had made to attract the interest of potential hosts. Using the example of a recent Olafur Eliasson installation (Waterfalls, 2008) in New York City, they argued that a permanent LAGI sculpture is a good financial investment due to the tourist money it would draw in.

Land Art Generator public artworks pay back both their carbon footprint and their installation cost over time, making them the perfect investment in our future. (Monoian and Ferry, 2014a)

Whereas other artists may be hesitant having their art serve the purpose of particular (financial) agendas, the directors did not find it problematic that LAGI 2014 served various purposes and agendas, including some at variance with their own. The enrolment of different actors (cf. Callon, 1986) thus depended on continuous oscillations in the way the project was performed: at one moment an art project, at another moment innovation of infrastructure. Contrary to Latour’s (1996) story of the Aramis train, which never materialized, torn apart by too many different demands, LAGI 2014’s success was in no small part due to the fact that it remained multiple (Jensen, 2010, pp. 19–31; Winthereik, 2010). These oscillations and the project’s flexibility created a space where different, even conflicting, agendas were able to temporarily coexist.

Oscillations in space, no less than in time, between agendas, and between conventions and innovation, were thus deployed as tactics for making LAGI 2014 cohere, not only internally, but also with the various actors involved in bringing the project to life. In the next session, we consider what these oscillations suggest about the political and cosmopolitical possibilities and limitations of the project as a space where different imaginaries of alternative energy futures coexist and come into being.

Cosmopolitical potentials and limitations

As we have shown, LAGI 2014 was very effective in generating support and in raising expectations among a wide set of important stakeholders, but we are left with a question regarding whether LAGI 2014 was successful in engaging the public. The project generated 300 submissions, many of which were truly inventive. In light of this apparent success, however, it is noteworthy that the award ceremony did not generate much public attention, and a majority of the visitors at the exhibition opening were professionals who had been involved in LAGI 2014 during the implementation process.

After the competition, an external evaluation report noted that the project had received quite limited local media attention and had failed to root itself sufficiently in the local public and professional community for it to create lasting implications (Innovation, 2014). Noticeably, LAGI 2014 did not appear to have given rise to any further explorations of different ways of infrastructuring energy environments, not to mention on what role art might play in these processes. Nor have any partners or stakeholders pursued the possibility of constructing any of the designs at Refshaleøen or elsewhere in Denmark.

It can thus be concluded that, in spite of LAGI 2014's success as a competition, and despite the participation and the great expectations of important decision-makers, it achieved relatively little by way of intervening in public life and in re-framing discussions around the energy infrastructures of the future. This conundrum is the focus of the following reflections. Relating back to the exiting literature suggesting that art has the ability to create public engagement (Marres, 2013), new forms of civic participation and engagement (Domínguez Rubio and Fogué, 2013), radical alternatives (Yusoff and Gabrys, 2011), and spaces for hesitation (Gabrys, 2014), we ask: What kind of politics did LAGI 2014 exercise and what capacity did the project turn out to have?

On the one hand, LAGI 2014 had the desirable effect of attracting a heterogeneous set of actors with different agendas and aspirations. The simultaneous performance of the project as art or alternative innovation—and thus not made reality—created a space where different imaginaries could temporarily coexist. It created a space for action, which allowed the project to come into existence as an ideas competition in Denmark. In this sense, the project enabled people imagining different futures and allowed them to meet outside their usual silos. On the other hand, however, one of the characteristics of this space was certain harmlessness. As shown in the preceding sections, the tactical oscillations of LAGI 2014 functioned in general to mitigate any sense of contradiction. The project's hybrid and flexible character allowed it to always oscillate away from controversy, or contradiction. In a constantly consensus-seeking manner, it performed a scenario in which no one was ever wrong, since the criteria of evaluation could always be changed. In doing so the project exercises a subtle and what we might call

smooth politics. At the academic symposium, organized in conjunction with the competition, the LAGI directors argued:

... we will show that in fact there can be this future working with beauty and renewable energy technology and we will slide into the politics without really having to discuss the politics. (Monoian, Symposium: Environmental Entanglements, 29 October 2014)

In our interpretation, this statement bears witness to a view of the capacity of art to become a political actor—as having a role in making alternative energy futures—in a particular manner. The LAGI directors did see their project as a highly political endeavour, but as the quote witnesses, and as the directors often emphasized to the LAGI 2014 project team, their tactic was not to make their politics visible to potential stakeholders. Following a tactics of oscillating (without calling it so) between different positions allowed the project to exercise a smooth politics. Thus, LAGI 2014 was very successful in mobilizing support and in becoming recognized as important by key decision-makers precisely because the project managed to slide into existing ways of doing environmental politics.

This strategy may be effective in mobilizing support but may miss out on other political potentials. LAGI 2014 made energy infrastructure public by way of inviting people to submit ideas for alternative energy production and exhibit these ideas to a broad audience, thus striving to publicize infrastructures. But LAGI 2014 does not “publicize” energy in the sense advocated by Domínguez Rubio and Fogué (2013).

Rather than making visible and public the hidden politics of energy infrastructures, the LAGI directors strove to render invisible politics of any kind. This is a form of project politics that hope for a shaping of the public imaginary without making strong positional claims.

This political strategy was related to its capacity to transport people—politicians and urban planners included—to an attractive, readymade future. The difficulty of mobilizing broader public interest in and imagination around energy infrastructures, however, may arise from the public’s sense that the future had already been designed as spectacle by competent others. These seductive pictures of the future do not make energy into a controversial and debatable matter of concern around which publics may emerge (Marres, 2012).¹²

The many proposals presented by LAGI all convey the idea that such alternative futures are smooth and frictionless, which was in turn problematized at the symposium, where another artist, also working with energy, proclaimed that this was “counter-productive to the transition to renewable energy” (Environmental Entanglements, 29 November 2014). According to him, the role of art is instead to show how complex, difficult, and muddy it is to re-design and eco-adapt infrastructures already in place.

While one limitation of LAGI 2014's cosmopolitics might relate to the difficulty of sparking a public debate, another relates to the *degree of alterity* inherent in the proposal. LAGI 2014 excelled in performing the future as (only) somewhat alternative. What was to be avoided was the projection of futures *so* different from the present time and the existing visions that decision-makers would be unable to appreciate them or unable to imagine how to get there. Indeed, LAGI 2014 made sure *not* to criticize or even question the existing politics.

Yet this is counter-productive from the viewpoint of cosmopolitics, which thrives on making forcefully available all the contrasts, demands, and obligations of different perspectives and practices. LAGI 2014 arguably missed out on the opportunity of creating what Gabrys (2014) calls "spaces for hesitation". Though the art project presents energy production as aesthetic power plants looking very different from wind turbines and solar panels, the competition failed to open a public debate allowing for potentially controversial discussion around how to integrate and live with renewable energy sources in the future. LAGI 2014 gained great attention, only to be quickly forgotten, perhaps because its strategy failed the central cosmopolitical test. Instead of articulating frictions, drawing creative power from its contrast, it rendered such frictions invisible or cosmetic (Jensen, 2005).

Rather than judge LAGI 2014 as a success or a failure, however, we would like to suggest a productive contrast. This entails recognition of the cosmopolitical demand that LAGI 2014 too ought to be presented in full force. The competition would have benefitted from highlighting frictions the controversial dimensions (in the STS sense) of infrastructure design. Yet it is also possible that social scientists might learn from its success to create support from politicians.

Paradoxically, one lesson to be learned is that the deliberate effort to "slide into politics" (as the directors expressed), without engaging politics head-on, might sometimes be the best way of re-inflecting conventional modes of thinking and feeling. The tactical oscillations of LAGI 2014 proved an extremely effective technique for sliding. As this article has made clear, tactical oscillation did not allow LAGI 2014 to convey via art the power to infrastructure environments differently. It did, however, offer important lessons on the challenges involved in making art and design participate in orienting energy futures towards renewability and sustainability.

Conclusion

In this paper, we have examined LAGI 2014's attempt to spur the public and political imagination around energy. We have done so by describing its ways of moving with and around various kinds of stakeholders to ensure the success of the competition. We conceptualized these movements as a set of *tactical oscillations*.

In summary, the project's hybrid character allowed it to: (1) oscillate between convention and innovation: the project managers were able to present the project as new and innovative without being at odds with existing visions for infrastructure development in Denmark. (2) Tack back and forth between the present and the future and between site-specificity and a non-situated everywhere: the project appeared as a temporal bridge, rather than make visible any chasms between existing and new politics. (3) Oscillate between different agendas for urban infrastructure development: the project's flexibility created a space where different and sometimes opposing agendas were able to temporarily coexist. We argued that flexibility and oscillations made the project successful in creating visibility and mobilizing financial and moral support among key stakeholders in the Danish energy landscape.

We have described LAGI 2014's attempts to intervene in the debate around re-designing energy infrastructure as *smooth politics*. While smooth politics proved to be rather effective in getting key stakeholders on board and for creating visibility around the project, this did not lead to any decision-making taking the environment differently into account in existing infrastructure development. Nor was it very effective in creating public engagement and participation in the project.

Comparing our analysis of the project with existing studies of other energy-related artworks, we showed how LAGI 2014 was operating through very different political strategies. Rather than rendering controversies and hidden politics visible and opening them up for discussion (Domínguez Rubio and Fogué, 2013; Marres, 2013), LAGI 2014 sought to smoothen them out and make them insignificant. Instead of proposing radically different energy futures, the design proposals were always performed as only *somewhat* new and as aligned with existing politics. Although indeed LAGI 2014 attempted to open the imagination to aesthetically different kinds of energy production, the goal was not to create space for hesitation and raise awareness of the ecological crisis (Stengers, 2005; Gabrys, 2014).

Based on these contrasts, we have argued that LAGI 2014 missed out on important cosmopolitical opportunities. However, reflecting on the case as a lost opportunity to present a cosmological proposal may not be fair to the efforts made to spur different imaginations with respect to what energy infrastructures may come to look like. Instead, we suggest that as a political strategy tactical oscillation has its strengths as well as weaknesses. From the viewpoint of cosmopolitics as creating spaces for hesitation (Gabrys, 2014), we conclude that highlighting controversy could have given rise to greater public attention, but paradoxically this would potentially reduce the participation of politicians and key decision-makers.

Our analysis contributes to the emerging empirical and theoretical investigations of what roles art may play in the process of reimagining and remaking environmental infrastructures. We do so by arguing that LAGI 2014's future-making practices hold political potentials somewhat different from those

already described. Rather than valuing one over the other, we have been curious about the different qualities of political strategies. There is indeed a need for “hesitation” and “slowing down reasoning” when (re)infrastructuring environments. However, the arguably urgent situation in which green transitions happen (or ought to happen) simultaneously calls for action—an action in which social science, humanities, and arts should proactively participate.

We have emphasized cosmopolitics’ normative commitment to slow down analysis in order to articulate hegemonic and naturalized politics and to suggest alternatives. But we are simultaneously confronted with a normative urge to speed up the analysis. Reflexivity as well as participation is needed. How can the attempts to infrastructure environments work around and within this dilemma? Could artists as well as social scientists benefit from tactics of oscillating between, on the one hand, a cosmopolitics of hesitation, friction and controversy making, and on the other hand, advocating for a more smooth and consensus-seeking path? Being aware of and working actively with such different political strategies, we argue, may be productive for infrastructuring environments with art and social science.

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Notes

¹See, for example, Nuage Vert by HeHe (2008), Natural Fuse by Usman Haque (2008), Super-gas by Superflex (1996), and Coal Fired Computers by YoHa (2010).

²For other analyses of Nuage Vert, see also Schick and Witzke (2011, 2014).

³See <http://landartgenerator.org/team2014.html>

⁴See the event *Pynt eller Politik?* (Decoration or Politics?). <http://voresomstilling.dk/artikel/pynt-eller-politik-kan-kunst-og-arkitektur-fremme-den-gr%C3%B8nne-omstilling/590>

⁵Environmental Entanglements: <http://energyfutures.itu.dk/events/environmental-entanglements/>

⁶The 2014 exhibition took place at the Danish Design Centre in the center of Copenhagen and was open from 3rd October to 7th November.

⁷<http://landartgenerator.org/portfolio.html>

⁸A downscaled version of one sculpture is under development in Pittsburgh, Pennsylvania. <http://landartgenerator.org/blagi/archives/category/renewable-energy-public-art/windnest> At Durham University, the professors responsible for the MSc programme in Energy & Society have been in dialogue with the LAGI directors to explore if building one of the sculptures could happen as part of the programme that precisely spans engineering, planning, and social science and humanities.

⁹<http://naturstyrelsen.dk/planlaegning/planlaegning-i-det-aabne-land/vindmoeller/borgerinddragelse/>

¹⁰Due to lack of funding this was not actually completed.

¹¹The partnerships with the two municipalities Allerød and Albertslund however extended to two other municipalities outside the region because they were all part of the cross-municipal partnership Green Cities. In order to engage Allerød and Albertslund, the entire Green Cities should be granted the opportunity to participate. One municipality however did not participate.

¹²In contrast, a public did indeed emerge around energy infrastructures shortly after the launch of the LAGI 2014 competition. In January 2014, the Danish Government sold 19% of the country's biggest energy provider DONG Energy (mainly owned by the state) to the American investment bank Goldman Sachs. This gave rise to major public protests causing a political crisis where one of the government parties left the coalition and six ministers resigned including the Minister of Environment and ambassador of LAGI 2014. This was, of course, not related to LAGI 2014, but though the project lost its ambassador, this controversy around energy infrastructures was not an issue that the directors regarded important to debate in relation to LAGI 2014.

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