Original research article

2050—An Energetic Odyssey: Understanding 'Techniques of Futuring' in the transition towards renewable energy

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ABSTRACT

After the Paris agreement on climate change (2015) climate change politics is no longer about raising awareness but about shaping the sustainability transition itself. It requires us to rethink the role of scientific knowledge, shifting from a tradition of "expected futures" to an approach focusing on "desirable futures" and ways to get there. We argue the sustainability transitions scholarship tends to see constructions of the future (visions, scenarios, predictions etc.) as *explanans* (that what explains) while constructions of the future are rarely seen as *explanandum* (that what should be explained). The article introduces the concept of 'Techniques of Futuring' defined as *practices bringing together actors around one or more imagined futures and through which actors come to share particular orientations for action,* to get a grip on the actual acts of 'futuring'. The empirical focus is on '2050—An Energetic Odyssey', a process centred around an elaborate multimedia installation, introducing large scale exploitation of the North Sea for harvesting off shore wind energy taking place in 2015 and 2016. We examine the Odyssey as example of a Technique of Futuring. We conclude with a reflection what the Odyssey teaches us about effective Techniques of Futuring to further the sustainability transition.

1. A new phase for climate politics

The 21st UN Climate Change Conference of the Parties (COP21), held in Paris in December 2015, resulted in a broad political commitment to act to contain global warming to 2, preferably 1,5 °C. It heralds a new phase in climate politics. Politics is no longer about raising awareness but about shaping the sustainability transition itself. It requires us to also rethink the role of scientific knowledge. It will have to shift from a tradition of 'expected futures' to an approach focusing on 'desirable futures' and ways to get there. Here the climate/energy nexus, i.e. the transition from fossil fuels to renewable energy is particularly important. Geels et al. [1] (see [2]) argue that the fields of sustainability transitions and practice-based action research could complement the traditional modeling approach in the IPCC tradition (specifically Integrated Assessment Modelling–IAM). It would connect the qualitative, interpretative and action-oriented nature of the transitions approach to the quantitative modeling tradition of IAM. Recognizing the differences in philosophical and theoretical underpinnings, they avoid the reflex of developing an even more complex model to include ideas from other fields. The new academic perspective should also speak to a broader networks of 'agents of change' able to bring about the transformation to a post-fossil future world, including NGOs and leaders from business and industry (cf. [3]).

Such a novel perspective relies on two main premises. First, the next phase of climate politics requires a much more explicit role for 'strategic narratives' [4] of future worlds, in this case *desirable post-carbon futures* (cf. [5,6]). Conversely, if we want to connect to a broader, more varied group of actors, we will also need to rethink the language in use. Desirable worlds cannot persuasively be represented in the scientific and thus strongly cognitivist terms of 'CO2 levels', 'ppm', 'CCS' as happens in the typical IAM backcast. Second, we need to rethink how knowledge gets mobilized for politics in an effective manner. We suggest to analyse climate politics in terms of the actual *enactment of knowledge in politics*. The perspective on politics as performance, elaborated in Hajer [7] suggests an empirical focus on the particular practices in which knowledge is taken up and strategic narrative is brought to particular publics. We argue that these practices can and should be analysed in detail, looking at the climate/energy nexus in terms of *a set of staged performances*. Successful climate politics is then understood as a function of the quality of the sequence of these performances, both in breaking out of lock ins in 'fossil futures' and in creating new shared perspectives on a future based on renewables. The article reports on a case study in which the attempt was made to create a coalition around renewable energy as a desired future. We try to understand the process of bringing together this coalition, including the 'incumbent' fossil related business and industry, around a new imaginary.

The paper first conceptualizes a desirable futures perspective (Section 2), discussing the literature on sustainability transitions (Section 2.1), on imaginaries and fictional expectations (2.2) and finally the work on politics as performance (2.3). This then culminates in the introduction of our concept of 'Techniques of Futuring' (from here: ToF) (2.4). In Section 3 we then report on '2050—An Energetic Odyssey' a concrete example of a ToF, centering around an elaborate multimedia installation. It visualized how North West Europe could reach the 2 degree target by 2050. It was commissioned by a broad coalition of actors, including the Dutch Ministry for Economic Affairs, the environmental NGOs *European Climate Foundation* and *Natuur & Milieu,* the Port Authorities of Rotterdam and Amsterdam, off shore industry and Shell Netherlands. In Section 4 we reflect on the Odyssey as a particular example of a Technique of Futuring.

2. Mobilizing the future for transformative change

2.1. Sustainability transitions

The idea that knowledge should be mobilized not to merely understand the world, but to actively help transform it, is a cornerstone of the scholarship on sustainability[1] transitions (see for instance [8–11]). The question *how* to understand or further a transition is central to this – varied – literature. This results, for instance, in an emphasis on understanding how to protect promising but still immature 'niches' for green technology [9] or an analysis of the protective behavior of 'incumbents' in the fossil fuel sector [12]. Moreover, with the so called 'spatial turn', geography has become an important explanation for understanding of transitions (e.g. [13,14]).

Next to the role of geography, several scholars have paid attention to the role of constructions of the future (e.g. [15,16]). Van Lente [17], among others, developed the notion of a 'sociology of expectations', which 'has studied how in scientific and technological developments actors continuously and explicitly refer to what is possible in the future' [17, p. 772]. While promising and containing critical ideas about the future, the subfield of sociology of expectations has only in a few cases been applied to the issue of sustainability transitions (e.g. [18]). 'Transition management' is a much more common perspective in the sustainability transitions debate. In this perspective 'visions' are seen as an important factor for success. Visions are defined as 'qualitative societal goals and ambitions that evolve through new insights, knowledge and experiences derived from short-term experiments' [19, p. 91]. In this vain, Smith et al. [20, p. 1506–emphasis added] differentiate five functions for visions in sustainability transitions:

1. Mapping a *'possibility space'*: Visions identify a realm of plausible alternatives for conceiving of socio-technical functions and for the means of providing for them.
2. A *heuristic*: Visions act as problem-defining tools by pointing to the technical, institutional and behavioural problems that need to be resolved.
3. A stable *frame for target-setting and monitoring progress*: Visions stabilise technical and other innovative activity by serving as a common reference point for actors collaborating on its realisation.
4. A *metaphor for building actor-networks*: Visions specify relevant actors (including and excluding), acting as symbols that bind together communities of interest and of practice.
5. A *narrative for focusing capital and other resources:* Visions become an emblem that is employed in the marshalling of resources from outside an incipient regime's core membership.

The above illustrates the multiple ways in which future constructions are mobilized in the transitions literature. Yet the sustainability transitions scholarship tends to see constructions of the future (visions, scenarios, predictions etc.) as *explanans* (that what explains) while constructions of the future are rarely seen as *explanandum* (that what should be explained). Still, understanding how visions actually come about and gain traction is crucial to further the sustainability transition.

2.2. Imaginaries & fictional expectations

The scholarship on 'imaginaries' is devoted to this issue of how visions gain traction.[2] Jasanoff and Kim [21] use the concept of 'sociotechnical imaginaries' (STIs), which they define as "collectively held, institutionally stabilized, and publicly performed visions of desirable futures" [22, p. 4].[3] According to Jasanoff and Kim [21], imaginaries are not solely a normative construction of the future, but a contested and politicized configuration at the same time (cf. [23]). STIs shape case-specific expectations and, when effectively re-enacted, give a degree of permanence to the socio-political network. In Jasanoff's approach sociotechnical imaginaries thus "occupy the theoretically undeveloped space between the idealistic collective imaginations identified by social and political theorists and the hybrid but politically neutered networks or assemblages with which STS scholars often describe reality." [22, p. 19]. Conversely, imaginaries have a double function; they are both an achievable *aim* and a *way* to achieve this aim.

It is closely related to the recent scholarship on 'fictional expectations' by the German sociologist Beckert [24,25]. Beckert works in economic sociology and aims to understand how economic actors deal with uncertainty. How can a capitalist investor decide whether a business proposition is viable when he/she cannot know what the future will hold? He argues that "it is the images of the future that shape present decisions." [24, 220–221]. These images of the future are necessarily 'fictional' because reports on the future logically cannot be factual. We must imagine a future state of affairs, and then decide whether to invest or not. Fictional expectations allow actors to organize and coordinate their action in the face of uncertainty. So "(…) the term 'fictional' should not be taken to mean that these expectations are false or mere fantasies, only that expectations of the unforeseeable future inhabit the mind not as foreknowledge, but as contingent imaginaries" [25, p. 9].

Beckert's understanding of fictional expectations [25,10–11] helps us define the possibility space to actively create shared desirable sustainable futures: (1) fictional expectations are a means to coordinate action and help actors operate in concert; (2) expectations affect the future because the help actors to coordinate their actions; (3) expectations can be the source of innovation, introducing radical departures from the present; (4) fictional expectations are deeply political as they either give permanence to the existing state of affairs or help further new lines of action which may have deep distributional consequences. We should appreciate Beckert argues his case in the sphere of economic theory dominated by a notion of 'rational' expectations [25, p. 217 ff]. With 'fictional' expectations he calls attention to the role of imagination in economic futuring. His analytical effort is to reconstruct which 'instruments of imagination' underpin particular futures.

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[1] The notion of 'sustainability transitions' resembles the notion of 'energy transitions' (e.g. [45]), we here prefer the former over the latter because it refers to a more cohesive body of literature with regards to the transition mechanisms at play.

[2] See Anderson [46] and Taylor [47] for conceptions of imaginaries in which the future is not a defining element.

[3] The concept of imaginaries has long roots in geography and urban studies [48,49]. It is now also important in the future thinking of science fiction and media studies [50,51]. Jessop [52] analyzed imaginaries from an institutional perspective, demonstrating how the institutionalization of dominant economic imaginaries can be understood as the resultant of an evolutionary process of variation, selection and retention. Jessop calls this 'cultural political economy' (CPE), aimed at showing the relevance of the imaginaries concept for analyzing the grand interpretative grids of society such as Fordism.

Both Jasanoff and Kim [21] and Beckert take issue with an overly historically deterministic explanation of change (e.g. path dependency). They also correct an all too individualistic understanding of imagination. Jasanoff and Kim [21] link imagination to the material and the social and bring out the complexity of the sociotechnological systems, while Beckert in his discussion takes issue with the risk of historical determinism looking at the particular knowledge instruments that are used to create imaginations of shared economic futures. Moreover, both emphasize the need to analyse the politics of imagination in terms of the institutional or sociotechnical contexts or practices in which shared futures emerge. And both suggest we should look at imagination in terms of performance and performativity [22, p. 10, 25, p. 276]. This is a logical step, requiring efforts to operationalize notions like performance and performativity to deliver on the promise of explaining how particular desirable futures come about and gain in influence. As Jasanoff puts it, more work needs to be done to understand if imaginaries can be transformative, "as vehicles for reenvisioning and recalibrating human futures" [22, p.27]. Dignum et al. [26] developed an approach to the performativity of visions in European energy policy. They assess the use and impact of visions in which they discern phases of process, content and use. As we are, they are interested in what may help visions to 'stick', hereby chiefly relying on more rational components of a proper process, content or usability. It still leaves open the question what in the interaction of people makes some imaginaries make people see the future differently, and what makes people act upon those insights, individually or collectively. A dramaturgical approach addresses this gap.

2.3. Politics as performance: a dramaturgical approach

The literature on performance spans many disciplines and is rich and diverse. A corner stone is the seminal work of Wittgenstein and Austin showing how we 'do things with words': to say something is to act [27,28]. They illuminated the importance of the situational practice in which actors interact, as is evident in Wittgenstein's notion of 'language games', Austin's 'speech act', or Burke's 'scene-act-ratio' [29]. Yet reading that literature now one is truck by the emphasis on the relation of practices to 'conventions'. In our case we want to understand the opposite: how is it possible to make alternatives desirable.

Performance analysis works from the presumption of the contingency of power in social situations. It argues that reproduction of existing power relations depends on the actual enactment of those relations. We argue that particular understandings of what alternative futures may be conceivable similarly depend on enactment. We therefore focus attention on 'futuring', the active engagement with the future. Futuring refers to the activity of actors-in-contexts trying to stabilize or destabilize shared notions of the future.

Futuring is thus analysed as performances, allowing for an appreciation of the power play at work, also in situations in which futuring is seemingly only about insight and cognition. It can draw on the field of Science and Technology Studies (STS) where Shapin and Schaffer [30] revealed how it was the experimental method culminating in the idea of the 'crucial experiment' that created a shared moment at which knowledge was mobilized and a new order was created. Importantly, they pointed out that the practice of seeing the experiment also demarcated the spheres of 'politics' and 'science'. Also in STS, Hilgartner [31] draws on the dramaturgical work of Erving Goffman showing in detailed empirical work how the authority of scientific advice can be understood in terms of the way in which reports are staged and what happens 'back stage'.

A performance analysis of futuring aims to identify the situations in which new understandings of the future are intersubjectively negotiated. It emphasizes the contingency (openness) of social situations and therefore insists on an empirical focus on concrete situations in which understandings of the future are performed or enacted. A performance perspective puts the analytical lens on the 'work' that is being done to create order and stability in inherently unstable situations. Looking at futuring in terms of performance helps appreciate the politics of futuring: while talking and acting we make certain new futures conceivable while others are organized out of our imagination. We apply the framework proposed by Hajer to analyse 'governance as performance' [7]. This framework distinguishes two dimensions of a performance perspective: discourse and dramaturgy.

'Discourse' can be defined as "an ensemble of notions, ideas, concepts and categorizations through which meaning is allocated to social and physical phenomena" [7, p. 64]. Discourse analysis suggests that new metaphors, new story lines or new concepts have the potential power to change the way in which we allocate meaning. The related concept of 'discourse coalitions', then allows to link the employment of those terms to a particular set of actors, as well as to the particular set of practices through which this discourse exerts its influence (cf. [32]). An example from climate politics could be the employment of the practice of 'Cost Benefit Analysis' (CBA) that, for a long time, suggested that measures to combat climate change were too expensive. The practice of CBA effectively blocked action on desirable post-fossil futures. This began to change when climate economists like Nicolas Stern critiqued the practice of discounting climate measures in CBA, opening a new debate within the CBA community. Discourse is regarded as a particular regularity in the choice of words that can be used to exert power, or, alternatively, to critique it. Metaphors, story lines, or particular concepts are no longer regarded as matter of communication *about* social or physical realities but as profoundly *shaping* realities. Having said this, discourse analysis never had a particular focus on futures and futuring or on desirability. A notable exception is the work of Levy and Spicer [33] who used an approach similar to discourse coalitions as the explanation for "why particular imaginaries [about climate change] become dominant whereas others remain relatively marginal" (p. 675).

Discourse analysis can gain substantially in interpretive power if we can reveal the *dynamics* of discourse over time. This is what a focus on 'performativity' brings. Performativity is an emphasis on the need for constant reiteration of a way of seeing the world. Judith Butler speaks of the 'stylized repetition of acts through time' through which norms are reproduced [34 p. 179]. If we want to use this theoretical perspective to explain the dynamics of promoting desirable futures, we need a better sense of how routines can be broken, or, alternatively, how radical new imaginaries can gain traction.

Dramaturgy is the second leg of a performance analysis. "Whereas discourse analysis analyses the dynamics of what people say, the dramaturgy of politics analyses how they say, where they say it, and to whom" [7, p. 65]. A dramaturgical analysis looks at the sequence of events, the staging, and who speak and to whom (the 'dramatis personae'). You can now look at the politics of futuring in terms of the scripting and staging of events, the setting ('mis-en-scene'). Politics is analysed in terms of the 'sequence of staged performances' through which particular imaginaries loose or gain in influence.

Based on the above we make five theoretical claims. Firstly, we argue that imaginaries are more likely to emerge as collectively performed ideas of desirable futures if actors are brought together in *new settings* as that repositioning allows them to break out of the 'scene-act-ratio' of their institutional routines. Secondly, we argue that such shifts in future expectations do not occur overnight. Rather, it is more likely to be the result of a *reiteration* of the exercise in futuring (hence the emphasis on 'a sequence of performances'). Thirdly, we argue that the coalitions that shape up around a new imaginaries require a *range of distinct stagings*. Each actor will have its own particular worries and might be persuaded by a particular staging, and not others. Effective futuring thus may require a tinkering with the scripting and staging of performances. Fourthly, there is a *materiality* to futuring. Concrete objects may function as 'boundary object' [35], allowing for different meanings to different people, but having the potential to bring people together at the same time. This emphasis on materiality related to the fifth and final claim: settings are more effective in bringing actors

together when allowing for an *immersive experience* (e.g. [36,37]). Recent literature on 'experiential futures' stresses that there is a need "to engage people more viscerally in futures conversations, which typically had high stakes but low affective engagement and embodied insight" [36, p. 137].

2.4. Techniques of Futuring

To give the performance perspective an empirical focus we coin the term 'Techniques of Futuring" (ToF's) defined as: *practices bringing together actors around one or more imagined futures and through which actors come to share particular orientations for action.* A ToF does not refer to particular tools such as 'backcasts', 'foresights', 'cost-benefit analysis' or map tables. In a performance perspective we focus on 'practices', examining the contextualized interaction of actors in which artifacts like backcast reports are employed or how the drawing of maps or the modelling efforts involved in decision support systems play out (cf. [38]). ToF's typically come with an identifiable way in which knowledge is mobilized (and what is defined as knowledge), a particular focus on a set of actors, and an orientation point for an intervention, a way forward.

Conceptually a focus on ToF's can contribute to both an improved understanding of the power of particular imaginaries or fictional expectations as well as to how we may get to new ways of seeing the future (cf. [22, p. 14]). Moreover, this approach could shed new light on more familiar ToFs such as 'public participation'. The analytical focus would then be on if, and if so, how it organizes acts of interaction, what tools are used, how uncertainty is reduced and if shared fictional expectations are emerging.

The empirical focus of this paper is on a transdisciplinary case study based on the concept of ToF. In the process various established tools (back casts modeling, stakeholder consultation and immersive design) were combined in a novel way. Crucial here was the attempt to bring together a broader set of agents of change (e.g. [8,3]) than merely governmental policy makers.

3. Case study: '2050—An Energetic Odyssey'[4]

3.1. The origin of a Technique of Futuring

It is April 10th, 2016. Henk Kamp, the Dutch Minister for Economic Affairs, welcomes the European Commissioner for Climate Action and Energy, Miguel Arias Cañete, as well as his 28 ministerial colleagues of the European Union member states, to an informal dinner at The Grand, a five star hotel in the medieval heart of the city of Amsterdam. The Netherlands hold the Presidency of the European Union (January–June 2016), and Kamp speaks for ten minutes about the need for an energy transition. After his introduction he invites the Ministers to follow him. The rest of the guests remain in the banquet hall. We enter a smaller, wood-paneled room. Once all ministers are in the room, the lights are dimmed. Then the floor turns blue, and quickly the spectators recognize the contours of the North Sea. A pleasant female voice-over narrates: 'In Paris, on the 12th of December of two-thousand-fifteen …'. It is the opening scene of a designed animation of a 'desired future' of 2050.[5] In 14 min the North Sea transforms from a site of oil and gas exploration to the centre of a strategy to reach the 2-degree target in North Western Europe. Centre piece are 25,000 giant 10 MW off shore windmills, catering for 90% of the electricity demand of the countries around the North Sea.

The above is a description of one of the stagings of *2050—An*

Energetic Odyssey (from now on: 'the Odyssey'). The Odyssey is an example of an immersive ToF aimed to create a shared desirable future. It comprises (1) a narrative, based on (2) a solid backcast study by environmental consultancy Ecofys, in combination with (3) imaginative multimedia techniques to enhance its effect on its target audiences that are invited to experience the Odyssey at (4) a sequence of events.

The background of this ToF is complex. The talks about a North Sea energy collaboration were in a stalemate for years. For years country representatives would gather in Brussels for breakfast meetings of NSCOGI (The North Seas Countries Offshore Grid Initiative) to discuss the development of a power grid for 2030 but to little avail. An earlier attempt to show the North Sea potential commissioned by environmental NGOs had made public headlines but had not resulted in a policy follow up. Controlling each other was as important as moving forward. In the mean time energy utility companies and some top level civil servants and politicians got increasingly nervous. If the countries wanted to reach the 2-degree target, and if they intended to exploit the potential of the North Sea for harvesting renewable energy, the basic infrastructure of cables and sockets, harbors and manufacturing was to be in place in time, and coordinated action was needed soon. The Dutch EU Presidency wanted to break out of this stalemate, changing the routines of how EU meetings EU were conducted. The Odyssey fitted that goal. The idea was to devote a substantial chunk of the so called 'informal meeting' of the Dutch EU Presidency to two particular design-led exercises: the Odyssey as an immersive ToF in which the North Sea would be employed to harvest renewable energy (most notably wind), and a 'serious game' to experience the benefits of collaboration first hand. Author 1 was asked to coordinate the first of the two interventions, the development and execution of what was to become the installation '2050—An Energetic Odyssey'.

Significantly, the Odyssey did *not* have a political origin. The opportunity emerged when author 1 was appointed chief curator for the 2016 International Architecture Biennale Rotterdam (IABR). Although academic by background, he wanted to use the arty 'biennale' as a 'soft space' for experimentation, allowing politicians and societal stakeholders to engage without directly committing to political action (cf. [39]). The ambition was to create a big, immersive installation, which was of interest to the various publics visiting the IABR. And, as is common in the cultural circuit, to be good it needed to be provocative. Initially the installation was therefore called 'Big is Beautiful' – a pun to Schumacher's 1973 environmentalist classic *Small is Beautiful* [40] – it was to show how much more societies need to do to reach the 2-degree target. The protagonists in public energy debate very much followed a 'David versus Goliath' format, with the greens calling for local (solar and wind) 'bottom up' initiatives, and the big incumbent energy utilities as the static and problematic fossil establishment. The idea was to conceive of an imaginary that would make the incumbents into an agent of change and show environmentalists that they needed to think big.

Raising the funds needed for the animation (some €225,000 was needed to make the installation and to commission high quality designers and consultants) and getting the commitment of the incumbents proved to be difficult. Initially Allard Castelein, the influential CEO of the Rotterdam Port Authority and former Shell manager, had refused to contribute, arguing his strategy was 'and – and': further invest in fossils *and* build up a renewable portfolio. Without his leadership others were reluctant to commit. Almost a year was spent bringing together a coalition and generating the money needed to develop the installation in an appealing way.

It was not until the biennale teamed up with the Dutch Ministry for Economic Affairs that the ball got rolling. The Ministry was preparing for the Dutch Presidency of the European Union. In that context the Director General for Energy, Mark Dierikx, wanted to get his colleagues to sense the virtues of a strategy of enhanced regional cooperation. Here the Odyssey could fulfill a role. The Ministry helped to raise the money and the IABR was asked to have a 'preview' ready in time for the

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[4] This narrative and the subsequent interpretation is based on qualitative research: ethnographic observations by one of the authors (from now on 'author 1') who was involved in initiating and developing the Odyssey and five in-depth interviews with key stakeholders after the Odyssey had ended and thus allowing space for reflection.

[5] The full 14 min animation can be accessed via http://iabr.nl/nl/film/2050_webvideo.

February meeting of the EU Directors General for energy in February 2016. With the support of a letter from the Dutch DG committing governmental money and calling upon the CEOs from several corporations active in off shore, electricity utilities and the harbors, to support this initiative, sufficient resources could be raised to go ahead. The assignment to make the installation was granted to the landscape architectural firm H + N + S, more in particular landscape architect Dirk Sijmons. Environmental consultancy Ecofys provided a scientific backbone. Their backcast study showed that the local initiatives would not add up to reach the 2-degree target while meeting societal energy demands at the same time [41]. Hence the need to think about an alternative scenario.

3.2. Workshops

The stakeholders were consciously invited to contribute to the production of the Odyssey both financially and 'in kind' in terms of expertise. This materialized in a string of workshops. Next to the nine paying parties, specialists from various ministries, from various utilities and knowledge institutes were invited. Purpose was to tap into their knowledge and interactively construct a narrative showing what it would require to get to the 2-degree target. Using the existing Ecofys high RES ('Renewable Energy Scenario for Europe') as a starting point, three half day workshops helped to define the most realistic and appealing approach to the transition.

The workshops were crucial to add details to the backcast, details only stakeholders would have. It was also the way to get the type of footage of North Sea ecology and the reality of off shore wind farm construction. In the final animation this helped to convey both the incredible scale of the effort (with 'jacked up ships' installing wind mills far shore) and the fact that a lot was happening already.

In drafting the narrative for the voice-over designer Sijmons and author 1 made sure that the scenario would be truly inclusive: hence first do all logical things like energy conservation, maximize decentralized renewable electricity generation. Yet, as this did not suffice, it would then introduce a big push in renewables, in this case taking the form of an off shore wind strategy on an unprecedented scale. By implication, it would require to mobilize the power of the incumbents from the off shore industry, which had a big stake in the fossil industry.

At the third workshop in December 2015 the designers from H + N + S shared a first version to the stakeholders who had a last chance to comment. It also kept the environmental movement on board that was afraid that off shore wind was all about the big incumbent interests exploiting the potentials of North Sea winds at favorable terms. Language was tweaked, and tweaked again, to keep the environmental movement on board (avoid that it suggested a corporate 'take over', putting ample emphasis on energy conservation first), and to make sure it would be able to fulfill a positive role in the first official showing on February 23, avoiding some words ('energy union'), highlighting others ('regional cooperation', see below), and paying attention to the fact that this was obviously only showing off shore wind as the optimum for North West Europe, while regional cooperation in the South or East of Europe would suggest another optimum mix (with a heavy emphasis on solar or biomass, respectively). A fourth workshop was devoted to planning a communication strategy for the Odyssey.

3.3. Stagings

Designer Sijmons and author 1 scripted a sequence of performances, and also discussed in depth the 'mis-en-scene' for the individual showings. This time the goal was not to raise awareness ('expected future'), but to spark the imagination: could one break out of a policy deadlock via a joint experience of a new desirable future?

The 'preview' to the DGs on 3rd of February 2016 took place in the entourage of the large atrium of the highly secured, modern and spacious Shell research laboratory complex at the north bank of the Amsterdam waterfront (see Illustration 1). It was the so-called 'informal' evening prior to the official DGs meeting. The EU-guests arrived by boat, were offered drinks and were then introduced to their two day stay by Dutch host, Director General Mark Dierikx, and the local host, Marjan van Loon, freshly appointed as CEO of Shell Netherlands. Dierikx, an old hand in the civil service, wanted to create an open atmosphere. Showing an imaginary of a successful transition to a low carbon world fitted that format, as did the 'serious game' the DGs were to play the next day. In both the installation and the game the emphasis was on the virtues of collaboration, among governments, between national governments and the Commission, and between governments and the business community. Conversely, some 30 Dutch CEOs from stakeholder industry and knowledge institutes had been invited to attend. After the opening words the curator of the IABR (author 1) set the stage for the showing of the Odyssey, suggesting that, in the wake of the Paris climate agreement, now was the time to shift from a stifling 'frame of risk' to a mobilizing 'frame of opportunity'. Some 60 European policy makers and leaders from business and society were then instructed to come and stand around a 10 by 8 m large square, marked out on the floor; the lights went out and on the floor the image of the North Sea emerged in deep blue, accompanied by a voice over ('In Paris, on the 12th of December of two-thousand-fifteen …'). At the same time the scale of off shore wind installation techniques and the beauty of the biodiversity of the North Sea was shown at two wide screens standing in between the DGs. For 14 min everybody was focused on the visuals and voice-over.

The animation caused considerable excitement. The intervention was bold. It suggested installing some 25,000 10 MW windmills far shore at the North Sea. At that time the Netherlands had approx. 2000 windmills, mostly smaller than 6 MW and mostly on shore. After the animation three CEOs, from Dutch off shore giant Van Oord, electricity utility company TenneT and the aforementioned CEO of the Rotterdam harbor, briefly underlined their belief in the Odyssey. Their message was candid: 'we can do this', 'we are ready'. The ball was now back in the ballpark of the policy makers: should they facilitate this by aiming for enhanced cooperation?

The hope was that policy makers and CEOs would be captured by the imaginary. The mis-en-scene and the dramatis personae were well rehearsed. The meeting was 'invitation only'. As anticipated, the rumor of the installation spread quickly. Journalists, policy makers and NGOs started calling, inquiring where and when they could see the installation for themselves. Aware of the importance of dramaturgy, it was decided to keep the installation exclusive until the opening of the biennale. One exception was made. It was decided to organize a 'private showing' for the radical environmental movement. This followed the worry, uttered in the third workshop, that while the consortium was broad and included respected NGOs such as the *European Climate Foundation* and *Natuur & Milieu,* the Odyssey might get a quick negative response from nature conservation NGOs *World Wildlife Fund* or *Greenpeace*. After all, the Odyssey foresaw in the installation of 25,000 windmills, many would end up at the shallow Dogger Bank, one of the biggest marine Natura 2000 reserves, in the middle of the North Sea. The private showing at WNF met a positive response but led to a next request: to organize a meeting around the Odyssey with marine ecologists from the countries around the North Sea.

On April 10th the aforementioned showing of the Energetic Odyssey to EU Commissioner for Energy Cañete, and the Ministers for Energy of the member states of the European Union took place. On the 16th of April *Het Financieele Dagblad,* the Dutch equivalent to the *Financial Times,* published a full page article on the initiative, emphasizing the extraordinary scale of the intervention: *25,000* major wind mills, *far shore* [42, April 16]. On April 23 the International Architecture Biennale Rotterdam (IABR) opened its doors. The Energetic Odyssey, showed on a slightly elevated, six by eight meter format, was one of the eye catchers in the 2500 m^2 exhibition space.

On June 6th, minister Kamp signed a Political Declaration to

Illustration 1. The 'preview' of the Energetic Odyssey for the national Director Generals for Energy of the 28 member states of the European Union, 3rd of February 2016.

strengthen the collaboration with the countries of the North Seas to coordinate the further development of off shore wind. Interestingly, a day before, minister Kamp was in the news with the plan for to step up the game to develop off shore wind. Journalist reported referred to the fact that he 'had literally shown this plan for the Northsea' to his EU colleagues.[6] The immersive ToF had its effect.

During the eleven weeks of the IABR biennale many politicians from mayors to ministers, both Dutch and foreign, gathered around the Odyssey. Particularly significant, however, were two meetings. On June 14th the marine ecologists from the countries bordering the North Sea came to see the Odyssey and gave their (positive) judgement on the invitation of the environmental NGO *Stichting de Noordzee*. And on 21st of June at 7.30 am, the IABR hosted CEOs from five major businesses, Shell, off shore giant Van Oord, electricity producer ENECO, the German construction company Siemens and the Harbor of Rotterdam. They did not gather at one of their convenient boardrooms or some fancy restaurant. They came to the IABR, staged in a derelict warehouse in the harbor area, they mounted the staircase made out of scaffolding, to sit next to the Odyssey installation.[7] As some were new, the CEOs first stood once again around the installation to see the imaginary and listen to the 14 min voice over narrative. With the Odyssey in the background, they discussed how to step up the game, suggesting to publicly call for a speed up of the energy transition in the Netherlands. The rest of that day was devoted to a workshop, organized by Shell, with experts from business, environmental NGOs and science to try and develop the strategy of a speed up of the energy transition.

As a result of that breakfast meeting, some 75 CEOs and high level civil servants gathered in the press centre of the Dutch parliamentary press, *Nieuwspoort* on August 30th, 2016. Perhaps to the surprise of many, the five CEOs announced their intention to help speed up the energy transition. The new debate was about 'getting things done', about governance, financial arrangements and entrepreneurial spirits. Rather than resisting acting on climate change, the new proposition was the need for concerted action. In Fig. 1 the different stagings and involved actors of the Odyssey over a period of almost two years are depicted.

In the months that followed various members of the coalition hired the Odyssey for showings in new contexts. The Odyssey was shown on off shore expo's in Hamburg, London, Amsterdam and Rotterdam. It featured at the national 'Climate Summit' at November 24, 2016, was briefly seen in the report on the summit of the eight o'clock news and the initiators were invited to give a range of presentations, amongst which at an 'upstream leadership team meeting' at the Shell headquarters in March 2017.

4. Understanding the Odyssey as Technique of Futuring

In the above we referred to Smith et al. [20] who identified five roles for 'visions' in transition processes. We slightly reframed their conceptualization in this paper by arguing that visions fulfill a function when they are enacted, i.e. they are a practice to engage with the future. Since the Odyssey took place in an open system with many contingencies (partly out of our sight) that influenced the process, we cannot attribute causality to the 'effect' of the ToF. However, from the interviews, observations and our reflections on the process we have developed a range of insights about *what* the effect of the Odyssey was and *how* this worked. With regard to the 'what', our findings suggest that the Odyssey fulfilled all but one of the functions that Smith et al. [20] identified. Firstly, for politicians and policy makers the Odyssey clearly helped defining a *'possibility space'* by making explicit the investments costs and infrastructure development required to reach the 2-degree target. This did not lead to defeatism, because the Odyssey simultaneously showed that it would be feasible in terms of

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[6] Cf. https://nos.nl/artikel/2109364-noordzeelanden-gaan-samen-windmolens-bouwen.html.

[7] This *mis-en-scene* was not the idea of the curator, but had come from the organizing committee entirely composed of people working for Shell.
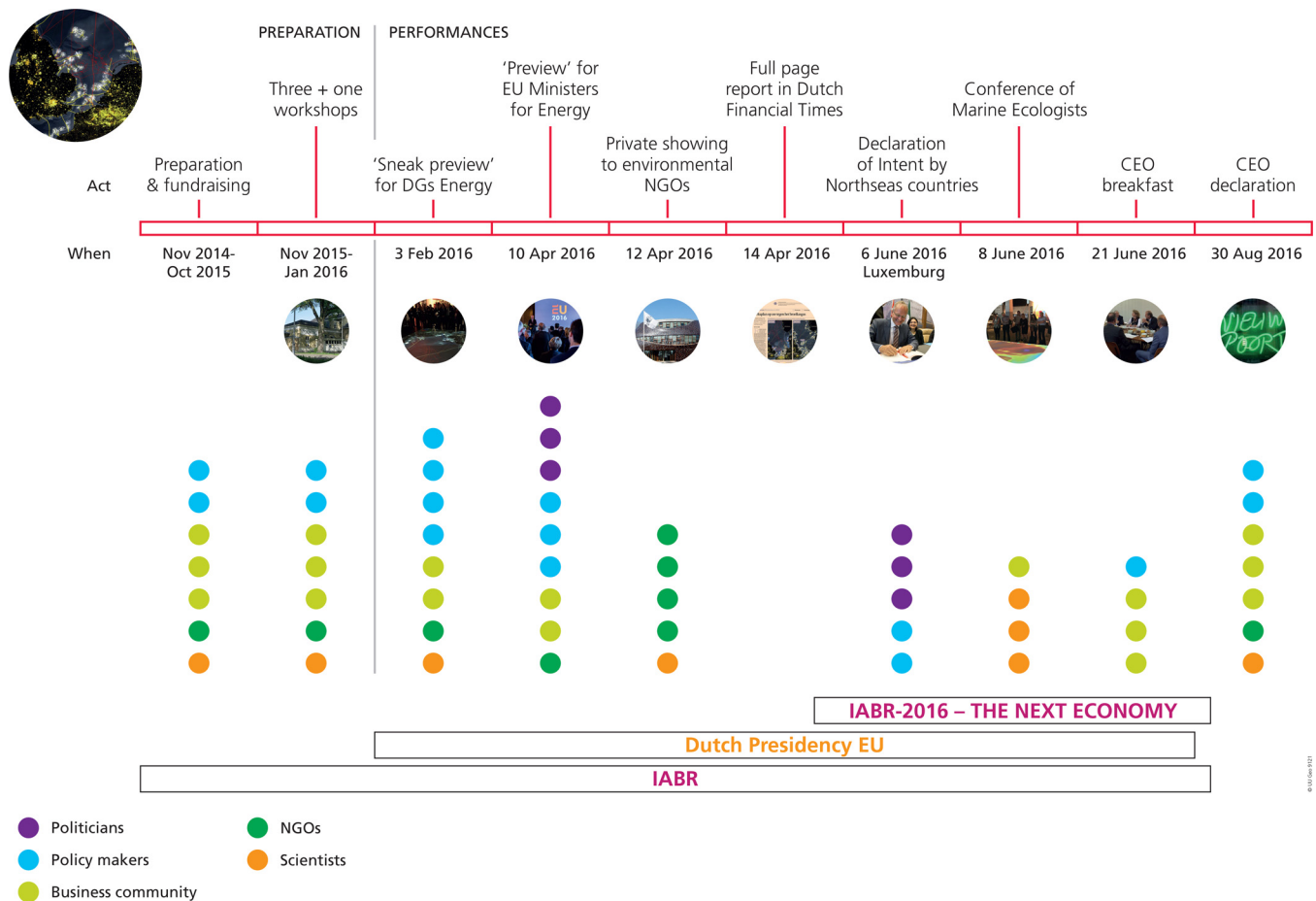
Fig. 1. Time line of events, November 2014–August 2016. The number of dots express the relative weight of the various groups in the respective meetings.

infrastructure, finance and ecology. Instead, it sparked a feeling of 'can do'. Secondly, the Odyssey also functioned as a *heuristic* for the stakeholders involved, because it allowed stakeholders to better grasp – both cognitively and emotionally – the issue of renewable energy at the North Sea. Thirdly, the Odyssey functioned as a *metaphor for building actor networks*. The process of developing the Odyssey in a range of workshops and showings, arguably exacerbated the regional cooperation around the North Sea(s) and the dialogue among private parties, NGO's and governments. Fourthly and finally, *focusing capital and resources* was the last important function of the Odyssey. The involvement of the parties in the making of the Odyssey was facilitated by the fact that they started to see the big financial possibilities of developing off shore wind. The preparations of the Odyssey coincided with the preparations of key protagonists of the coalition for several major bids for concessions on large offshore windfarm locations. In December 2016 this consortium, of Shell, Van Oord, Eneco and Mitsubishi/DGE, won a bid for the off shore windpark Borssele II, at the price of € 0,0545 per KW, an price inconceivable only a few years ago. The last function identified by Smith et al. [20] of *target setting and monitoring progress* was arguably less relevant because the Odyssey was about an early and explorative phase of multi-decade process of renewable energy on the North Sea.

A first and foremost aim was to understand the mechanisms (the 'how') that made that the Odyssey could fulfill those functions. In our terms, see the shared vision as *explanandum*. Here we will revisit the five theoretical claims we laid out in Section 2. Since this is transdisciplinary and qualitative study, these claims will not be 'tested', but refined and illustrated through the case study.

● **Theoretical claim 1**: *Imaginaries are more likely to emerge if actors*

are brought together in new settings as that allows them to break out of the 'scene-act-ratio' of their institutional routines.

The Odyssey allowed a group of actors to experience a possible future breaking with the routine of boardrooms or all to familiar official policy settings. The group of actors met in a 'soft space' [39]. This gave many the freedom to just experience it, and not immediately approach it as a (Dutch) policy proposal. The Odyssey was consciously not framed a 'policy proposal' but as a 'preview' of a bold plan, 'soon to be seen at the Rotterdam biennale'. The Odyssey not being policy, the initiative coming from a 'biennale' hence from 'the cultural domain', created the preconditions for its success as a tool for transition. It was, as the respondents noted, 'policy free' or 'at a distance of policy'.

Framing it as a cultural intervention created another 'scene-act ratio' [29] as people, implicitly, would judge the quality of the performance by different criteria. The freedom of the 'cultural' space in that sense almost required it to be somewhat provocative. Indeed, in his introduction to the sneak preview to his colleague DGs it was precisely this 'somewhat provocative' nature of the Odyssey that he underlined as important. Afterwards Dierikx emphasized that the Odyssey could be a bit more provocative, because his Ministry of Economic Affairs could always dissociate from its content: "I gave you more freedom, also because I thought, you know, the more relaxed I approach it, the easier I can distance myself from the installation once it is ready."

● **Theoretical claim 2**: *Shifts in future expectations do not occur overnight, but are the result of a reiteration of the exercise in futuring.*

The case of the Odyssey showed shifts in future expectations do not occur overnight. The ToF consisted of a sequence of events that helped

build a coalition, step by step. It started with fundraising without imaginary, subsequently it created a common narrative through a string of workshops and then it created a coalition via a set of successive showings. Success was by no means guaranteed; it built up. Here it was the reiteration of the exercise, in which different elements were brought in (funding, ideas etc.), that turned out to be pivotal.

With hindsight it was key that organisations promised to also pay 'in kind'. Their expertise as insiders allowed to draw up a narrative recognizable by the various stakeholder. The particular concerns of stakeholders were identified ('facts matter', see [43]), and new options and solutions were brought up. For instance, in the workshops sessions it came out that the installation of off shore wind could become much cheaper via a bold intervention: building an island in the middle of the North Sea near the Dogger Bank, with a hotel for workers. From there the final assemblage of windmills could take place allowing to speed up the installation of windmills. The island would also be a logical location for a giant transformer to convert alternating into direct current electricity to help bring it on shore with far less energy loss. Similarly, it was because of the workshops that the technology of military radar was included in the narrative. Radar could be used to spot birds and make sure wind farms would be shut down temporarily to allow flocks of bird to safely pass. At some points calculations were made on the spot in the workshops. Interestingly, at moments the sheer scale of the off shore business even surprised the stakeholders themselves. In order to be persuasive a narrative requires a strong overall story in combination with considerable detail. That was facilitated in the workshop sessions.

- **Theoretical claim 3:** *Coalitions shape up around a new imaginaries through a range of stagings, often under slightly different circumstances.*

Just like expectations about the future do not change overnight, coalitions only materialize slowly. Author 1 and the lead designer were very much aware of this. In order to shape a coalition a string of distinct but connected stagings of the Odyssey was designed with particular audiences in mind, from top civil servants at Shell, to Ministers at a five star hotel, to side showings at the IABR. Each time the mis-en-scene was tailored to the particular dramatis personae.

- **Theoretical claim 4:** *There is a materiality to futuring.*

We think the Odyssey worked as catalyst of a shared desirable future partly because it functioned as a boundary object [35] that, over a sequence of particular staged performances, helped in the formation of a new coalition, including policy actors and other societal agents of change. 'The Odyssey' became a focal point for a conversation, a stage set for a new approach. Its very particular form, changing its character slightly over the course of the sequence of events, but also in terms of staging (at surprising, 'non-policy' settings) and presentation (a multimedia animation) was literally an eye-opener of what the future could be like. As such it facilitated a more open interaction amongst the coalition members. We see that the Odyssey fulfilled a role connecting events, *across* a range of settings, in which it worked like a boundary object for the repeated rehearsal of a shared post-fossil imaginary. The Odyssey had a different meaning to different people but the Odyssey also became a story in itself. People started to tell the story of its inception, of its initial showings, of its effects.

- **Theoretical claim 5:** *settings are more effective in bringing actors together when allowing for an immersive experience.*

Being immersed in a quasi-theatrical performance (doors closing, silence, lights dimmed, etc) while watching the floor projection unfold, was in our view crucial for the impact of the Odyssey. We noted that the continuous showings at the biennale (in a big derelict warehouse, with many other imaginative ideas around it) was less effective than the

taylor-made showings at Shell and The Grand. The exception being the active utilization of the biennale as a – unusual – site for the CEO breakfast and other, carefully staged collective experiences of the 14 min expose.

In all, we argue the immersive settings created a *new potential for interaction.* It was truly theatrical and those present were stimulated to suspend their disbelief. With the Odyssey, policy makers and others did not find themselves around a round table in yet another airconditioned conference room. Now they found themselves either in a dark atrium of the Shell Research Laboratories, in a pitch dark paneled room next to the hall of the welcome dinner in the chique five star hotel The Grand, or in the rough and impromptus environment of the derelict warehouse of the Fenixloods during the 2016 International Architecture Biennale (IABR) in Rotterdam. Showing the Odyssey at such selected places created another expectation, arguably also doing something with the mental openness of those invited.[8] As DG Dierikx emphasized, the Odyssey was to get people to imagine a new possible future.

We think its effectiveness as a ToF came partly from the fact that it allowed to jointly experience a desirable future. The joint experience of the 14 min 'staging' of the Odyssey, followed by CEOs that argued that they were 'game', proved to be a *mis en scene* particularly fit to deliver a new shared future orientation. Indeed, we observed key protagonists started bringing their business and government relations to the Odyssey at the biennale to expose them to the imaginary. Obviously, the ongoing discussion and coalition formation process was underdetermined. Depending on the concrete interactions the Odyssey could generate enthusiasm or fail to produce a renewal of the mutual interests in the process. Stakeholders were not passive recipients of the preparatory work mediated by the designer; they directly contributed to the narrative, adding important insights for the strategy to reach the two degree target. Moreover, they took over the concern for the staging of the events, as in the case of the CEO breakfast next to the Odyssey, which was initiated by Shell as was the subsequent meeting in the parliamentary press centre.

While staged, the backbone of the Odyssey remained a backcast study. On its own a report could not have had this effect. The Odyssey 're-presented' scientific knowledge in a truly new way; immersive and visual rather than focused on text and numbers in written down form. Its appeal undoubtedly came from the fact that the predominant narrative of 'reason', with its characteristic indirectness of reports and statistics, was *combined* with an immersive experience, via an oversized visualisation combined with a voice over suggesting 'matter of fact' realism.

5. Conclusion and reflections

In this paper we started from the premise that in a Post-Paris world needs to give more attention to how academic knowledge can be mobilized for the development of 'desired futures'. We suggested we need to see how this involves active 'futuring' and introduced the concept of 'Techniques of Futuring' to make this an empirical object of study. We illustrated the argument through the case study of the Energetic Odyssey, an consciously developed ToF aimed initiated to contribute to a more positive and inspiring imaginary about renewable energy. Critical in our conceptualization is that a ToF has to be enacted or performed in order to have an effect, which could involve shaping coalitions or contributing to a shift in expectations. We used Hajer's [7] work on governance as performance to show that such a performance is not random but always *staged.* As the discussion of our five theoretical claims shows, this staging refers both to particulars *events* as to the *sequences* of these events. With regards to the events, we emphasized in

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[8] As Mark Dierikx noted: "Yes, I am going to do it differently. I am not going to have a 'round table' with 28 interventions that have been prepared in the various capital cities." (Mark Dierikx, interview).

particular the importance of settings, referring to the pivotal role of the (lack of) institutional context (soft space) and visceral experiences (immersion). Moreover, we emphasized that these events can only be successful if they are connected to each other. This connection has a double and complementary dynamic: it is both about repetition so shared values will be developed, but also about the expansions and refinement of the words and actors involved, so the developed narrative can 'glue together' a coalition of agents of change. All in all, the case of the Odyssey shows a constant *tinkering* by the curator and the lead-designer. It illustrates how futuring is a very active process of constant readjustment. This tinkering concerned the careful combination of text, visuals, numbers in the actual presentation but most certainly also included the concern for the actual dramaturgy, the showing of the installation.

Thinking about futuring in terms of a sequence of staged performances allowed us to see how a varied group of actors could come to share an imaginary of a desirable future. This is important for the new challenges of climate politics but it also speaks to the condition of what Bevir and Rhodes [44] called 'differentiated polities'. Today solutions often need to be found 'in between' existing organizational formats. Here our logics of specially staged events is of great relevance.

However, we are aware that the coalition that was shaped related to the Odyssey consisted mainly of elite actors from policy, the corporate world and academia. While the general public could visit the Odyssey at the architecture bi-annual, the crucial showings were structured around elite actors, bypassing the democratic process. Next to the showings, this elitist perspective was also central in the narrative that was told – a strong state, and strong big business would be able to 'fix' the climate crisis. While this setup was chosen deliberately as an antidote to the dominant 'small is beautiful' discourse, and to see if a broader coalition could be brought together, one should definitely not infer from this that we argue that the sustainability transition should be develop only along the ideas central to the performances of the Odyssey in 2016. Furthermore, while the Odyssey depicted only one desirable future, a plurality of futures and stakeholders remains necessary in the Post-Paris era.

Finally, it obviously would be wrong to attribute the change that occurred all to the Odyssey. That was not the purpose or intent of this paper. While our interviews and observations suggest the Odyssey contributed to improved regional cooperation about offshore wind and brought together a coalition of elite stakeholders around a new imaginary, our research format was not tailored to prove outcomes would have been different had the Odyssey not existed (if at all possible). We wanted to examine in detail how active futuring works, and if new ToFs have the potential to contribute to sustainability transition (here the introduction of renewable energy on a massive scale). We acknowledge the Odyssey took place under contingent conditions, that were favourable to its success, such as the Dutch Presidency, a Director General who was willing to experiment, a well networked curator and an architecture biennale that could function as a soft space. We see value in detailing its dynamics, in showing its building stones and develop, not as a 'theory' of ToFs. It reveals what you see when you investigate the nitty gritty details of acts of futuring and it shows the value of this type of interpretative social science work in the era of Post Paris climate change politics.

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