MEDIATED SCENARIOS: THE INFUSION OF ART AND DESIGN IN SCENARIO PRACTICES

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I. Introduction:

Applied and theoretical research into novel foresight methods is pushing forward to consider how art and design are relevant, and perhaps even necessary, for effective interventions. Taking the governance of emerging energy technologies as a focal area, this preliminary research for a Marie Curie Fellowship investigates scenarios mediated through cutting-edge gaming, visualization, simulation and design techniques. The focus on mediated practices of foresight pushes beyond an infusion of art and design into scenarios in an instrumental way, making more aesthetically palatable futures. Rather what I call 'mediated scenarios' refers to an emerging paradigm of foresight that values data rich, intimate, and participative practices. This combination of features distinguishes these novel forms from traditional foresight methods that focus on probabilities rather than plausibilities (Selin & Ramirez 2014), often fail to meaningfully connect with the situation, decision-makers or concerns at hand, and tend to lean towards experts. Some of these new mediated practices shift away from more technocratic models of participation that often display an impoverish understanding of the co-production of technology and society.

The urgency and complexity of uncertain energy futures provides a compelling locus of concern for this research into novel foresight practices. Energy systems at every scale are under substantial transition and are of extreme local, national and international concern. While decisions about such energy transitions are urgent, there are often not clear pathways to ensure sustainability for future generations. One difficultly relates to technological choice: there is no way to evaluate the potential of a given energy technology in isolation, as each apparatus is interconnected and co-produced (Jasanoff 2006) alongside of a variety of other technologies, physical, environmental and social infrastructures, institutional set-ups, economic arrangements and historical backdrops. There are numerous uncertainties about the interactions of the system and how different variables might evolve over time thus creating a high stakes decision-making environment riddled with complexity, ambiguity and volatility (Funtowicz and Ravetz 1992).

More than a question of risk-benefit calculations or good intentions, decisions about emerging energy technologies tie to a number of factors that might disrupt the best of attentions. There are risks and benefits around, for instance, energy security that often spark violent conflict, the displacement of food production, or the depletion of natural resources important for energy production. In recent years, the disasters of Fukushima and Deep Water Horizon raised the spectre of 'normal accidents' (Perrow 1984), suggesting that as society works harder to produce energy, we move into unchartered territories of imminent risk. Add to the mix ever-expanding energy-hungry populations, the inconvenience of climate change, and accelerating inequities around the world and it becomes banal to point out that times are changing and that the past is

not a good guide to the future.

Good governance in the energy sector requires a future orientation. With huge capital investments and long lead times to develop, test and implement new technologies, decisions made today will have impact decades later, giving uncertainties opportunities to proliferate. Each promising energy technology, whether natural gas, nuclear, wind or solar, come with their own set of unintended consequences and unforeseen political, social and economic backlash. In the energy sector these dynamics involve questions of scale, of centralized or decentralized control, of the power of the incumbents versus the openness of markets to new players, and land use. Assessing prospects is not just a question of which energy technology—the future of energy is dependent upon a complex network of issues shrouded in varying levels of uncertainty, ignorance and contestation. In this wicked environment, prediction may be desirable but is not possible (Sarewitz et al 2000).

In this context of complexity, decisions have to be made with uncertain and incomplete knowledge. Choices about emerging energy technologies are particularly tricky due to the Collinridge dilemma: outcomes cannot be predicted until a technology is adopted, yet once path dependencies materialize and technologies get "locked in", control or modulation becomes difficult as rigidities in markets, cultural values, institutions and policy form (Collinridge 1980). Confronting this dilemma to responsibly govern the outcomes of technological endeavours involves creating space for discerning dialogue, generating options, and setting priorities upstream (Barben et al 2008; Guston and Sarewitz 2002).

Future-oriented research and practices, like scenario planning, have the potential to generate more socially robust and resilient solutions in complex situations by sorting out critical uncertainties and path dependencies. Foresight involves a whole range of practices, methods and tools (Selin 2008) and has long been used by firms, public institutions, and multi-stakeholder groups to try to manage uncertainty. Foresight is markedly different from modelling exercises that rely on extrapolating large historical data sets with a semblance of accuracy and predictive strength. Instead foresight questions fundamental assumptions and deals more with better understanding the uncertainties that overwhelm more traditional modelling techniques. While looking to the future is as old as humanity (Adam & Groves 2007), foresight techniques emerged out of military planning in the 60s, moved into corporate and governmental settings and are now commonplace in business and governmental settings (Tsoukas & Shepard 2004; Ringland 2002). Foresight methodologies are often employed to bring together different constituents around specific problems that require a variety of perspectives, where no single discipline can find a solution.

In energy sector, these more qualitative scenarios have been employed by a wide variety of agencies, governments and civic groups, the most well known being Shell scenarios (Wack 1985, Selin 2007, Wilkinson & Kupers 2014). Scenarios are "stories describing different but equally plausible futures that are developed using methods that systematically gather perceptions about certainties and uncertainties (Selin 2006, p. 1). However, despite this tidy definition, there is a diversity within the practice with sharp distinctions in the scenario planning community between scenarios that are weighted more qualitative or more quantitative, normative or descriptive, participative or expert. There also exists a bifurcation within future-oriented practices of those who see uncertainty as reducible and prediction a possibility and those methodologies that take uncertainty as intrinsic and prediction unreasonable (Wilkinson

2009). There are also different genealogies of scenarios (Bradfield et al 2002) and variations in disciplinary understandings of scenarios. There are many methods and each practice maintains different purposes, goals, epistemologies, and contexts of use. Most studies indicate that scenario development is on the rise as a tool to manage uncertainty, yet however well used these methodologies are, there is a dearth of understanding about what works, why and under what conditions. A strong practice orientation has emerged with scholarship trailing behind.

II. Methodological Approach

This proposed research involves two phases of qualitative research to empirically investigate the make-up, impact and products of novel foresight methods that infuse art and design, with an initial focus on the intersection between design and scenarios. Key questions include: How can foresight practitioners work to make the future more tangible through the use of designed objects and interactive experiences? What are the implications of using future artefacts as complements to narrative scenarios? What is the significance of incorporating affective, creative and emotional aspects – the fodder for designers—into scenario planning processes? Drawing on perspectives of anticipation, materiality and governance in the field of Science and Technology Studies (STS), this project seeks to create a taxonomy of mediated scenarios and characterize the nature and workings of such innovative foresight practices.

This project will tackle two primary objectives formulated around better understanding the nature and efficacy of mediated scenarios using a suite of qualitative methods. Qualitative research focuses on "subjective meanings, definitions, metaphors, symbols and descriptions of specific cases. [The researcher] attempts to capture aspects of the social world for which it is difficult to express in numbers" (Neuman 1997, p. 329). Grounding inquiry in case studies and practitioner interviews will contribute to the rather impoverished empirical base of literature on scenario planning that pays little attention to the context of use.

Objective 1: to characterize the practices associated with mediated scenarios

Through interviews with scenario practitioners and extensive document and media study, this phase of the project will track and characterize these new forms of foresight emerging around the world.

Objective 2: to evaluate the efficacy of new foresight practices

Through the development of two case studies, the use and effects of mediated scenarios will be captured, analyzed and assessed for best practices.

In meeting the following objectives, this research aims to contribute a deeper understanding of anticipation and the more intricate negotiations that go into the construction and communication of energy futures.

III. The Next Frontier of Foresight: Mediated Scenarios

This research is thus positioned to better understand the nature and use of 'mediated scenarios'. While scenarios and foresight have historically been used to grapple with uncertainty in the energy sector (Selin 2007; Rossetti di Valdalbero 2010) and while traditional uses of scenarios persist, there is a burgeoning community of practice that infuses art, design and information technology into the development and delivery of scenarios. In efforts to make the future 'real and tangible', foresight practitioners are increasing merging science and art in an effort to increase the value of scenarios in exploring options, resolving complexity, and motivating action. These novel methods draw on the narrative strength of scenarios but 'mediate' the scenarios with visualization techniques, simulation models, material prototypes and through gaming

architectures. This research will work to conceptualize *mediation* in the context of future-oriented practices.

Some examples of features of mediated scenarios with indicative projects:

1) Distributed virtual spaces and game mechanics: The Institute for the Future has, over the course of four decades, developed and refined their computer-based, interactive "Foresight Engine" as a technique for aggregating expert opinions about the future. In recent years IFTF has worked to widen the scope of participation in thinking about the future, drawing on leading edge tools and methods for crowdsourcing. In spring of 2010 the Institute of Electrical and Electronic Engineers (IEEE) conducted a multi-player game with IFTF to ask its participants how they would solve the electrical power needs of the world in 2025. Smart Grid 2050 yielded massive data from across the globe from the engineers, scientists, academics and business leaders who played it.

2) Intensive use of data through modelling, projection, touch screen visualization, and photography with high throughput of data, either user generated or hacking into large data reserves. For example, the Vancouver Local Climate Change Visualization project used immersive visualization techniques, dynamic 3-D modelling, and photographic analysis to help members of the public and policy-makers get up close and personal to the future of climate change. Both low tech and hi tech methods were employed to morph familiar landscapes into different future scenarios to help participants visualize their backyards (Sheppard et al 2011).

3) Highly participative: Ken Eklund designed World Without Oil as a massively participative 'serious game' to rehearse local responses to prohibitively expensive oil. In month-long game play, thousands of people 'played themselves' and considered how their daily life would change in the event of a protracted oil crisis. While there were story-telling components, participants were also asked to enact their new behaviors in their local communities. The game enabled individuals to contribute their experiences and speculations through photography, video, email, or in messages in this participatory 'pre-enactment' of an oil crisis.

4) Visually rich and/or tactile: Some scenario practitioners enliven their results with genres that exist now, such as advertisements, street signs, or product packaging, to help convey the differences between the present and future in a cultural language people can readily assimilate. For example, a cereal box from 2040 claiming that the cultivation of its ingredients results in a net removal of CO2 from the atmosphere might be used to express a future world deeply engaged in greenhouse gas reductions. These so-called "Artifacts from the Future", popularized in *Wired* magazine, make use of infographics, pictograms and 3-D objects to transform everyday artifacts into visitations from the future.

IV. Conclusions: Mediation- Risks and Rewards

Little is pursued in the literature about these emerging practices, how they should be conceptualized and analyzed, or how they work and why. There has been no systematic study about this constellation of methods or what kinds of energy futures are envisioned through them. These methods traverse some traditional taxonomies of scenarios (e.g. van Notten et al 2003) in their focus on materiality and incorporation of design thinking, performance and radical interactivity. Within this constellation of mediated scenarios, there are a number of different methods, using different forms of mediation, with different purposes, deliverables and outcomes. There are variations in application in different regions of the world, which introduces cultural modifications in scenario generation and delivery. This research will help to position these emerging practices and develop a sort of framework to drive a taxonomy that will support the asking of critical questions about the nature of these novel forms of foresight.

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