



# Back to the futures: Retrospecting the prospects of smart grid technology



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## ABSTRACT

This paper analyzes a ten-year long technology debate, which dealt with the so-called advanced electricity meters in Norway (1998–2008). The debate circled around one central question: should the implementation of this technology be forced through with regulations or should the market decide on pace and character of implementation? In 2008 it was decided that it was best to regulate the implementation. Throughout these 10 years, the debate largely concerned how the future would look with or without regulation. This paper is inspired by “the sociology of expectation”, which assumes that futures are performative. This means that when the future is evoked or imagined, it influences present action and navigation. With this in mind, the paper analyzes future visions and expectations as they were formulated in the technology debate, and traces the role of these futures in the policy debate and for the policy outcome. The paper identifies two modes of future performativity: translative and transformative futures. Translative futures are often mobilized as spokespersons for desired technology or policy trajectories. Here, they work as (a) *staging devices*: sparking debate, enrolling new actors in the debate and generating interest. Further, they work as (b) *regulative tools*: establishing the need for political decisions, either to realize the content of future visions, or to avoid the contents of alternative futures. Transformative futures do more subtle and gradual work, shifting the practical, symbolic and cognitive meaning of “what” the technology in question might become in the future. As an example, the significance of the advanced electricity meters discussed in this paper changed from being a device filling the knowledge gaps of electricity consumers, to being a central hub in households delivering a range of potential services and being available for a number of different users. In this paper, I describe the gradual shift in understanding of what advanced electricity meters could be as a virtual domestication trajectory.

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## 1. Back to the futures: retrospecting the prospects of smart grid technology

In the 1950s many thought that nuclear power would provide abundant electricity “*too cheap to meter*” for the baby boomers grandchildren (e.g. Gamson & Modigliani, 1989). In the 1980s hopes were high for a future “solar society” (e.g. Caputo, 1984), while people of the early 2000s had high expectations for the “hydrogen economy” (e.g. Bockris, 2002). When new energy technologies are discussed we often end up discussing how the technologies might change society. Currently,

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much hype surrounds the possibilities offered by a new set of technologies often referred to collectively as components of the “smart grid”.

There exists a substantial body of social scientific literature that takes an interest in future expectations. This literature – often referred to as ‘the sociology of expectations’ – is concerned with how expectations for the future play a role in processes of technology development and innovation (e.g. Borup, Brown, Konrad, & Van Lente, 2006; Brown & Michael, 2003). Authors in this tradition assume that expectations are performative. This means that shared expectations and shared visions of technological potential take on a form of agency: they affect and guide the navigation of present-day actors. Visions of the future can be used as tools to interest and enroll other actors with the intention of promoting certain technological pathways or political solutions. For example, when Dwight D. Eisenhower spoke before the U.N general assembly in 1953 to promote the idea of “*Atoms for peace*”, he evoked images of an atomic future that differed distinctly from the gloomy and dystopic images provoked by the prospects of atomic warfare.

This paper builds on the sociology of expectations with the intention of grasping the role that future expectations play in the making of technology regulations and policy. The paper's backdrop is a principal decision made in Norway in 2008, when the authorities made it mandatory for all electricity grid operators to install so-called advanced electricity meters with their customers.<sup>1</sup> This marked the end of a debate which had spanned over 10 years: should the installments of new, digital electricity meters be forced through with political means or should the market decide on the pace and character of implementation? I set out to do an empirical study of these 10 years of debate in order to assess how futures were articulated, and in which ways these futures were performative.

## 2. Futures, innovation and regulation

Social scientists working with the future have typically engaged in making some sort of prediction. Most commonly futures have been written through the application of forecasting or scenario-making techniques (see e.g. Börjeson, Höjer, Dreborg, Ekvall, & Finnveden, 2006). My intentions are different and without predictive ambitions. I want to search for potential relationships between futures and the present. Inspired by the sociology of expectations I will do what Nik Brown and Mike Michael (2003) have labeled “*retrospecting prospects*”. For me, this means to study how futures with extensive use of advanced electricity meters were envisioned in the Norwegian policy debate from 1998 to 2008. Further, I will study the role of these futures: how were they mobilized, discussed, promoted, rejected and modified throughout the period? Most importantly, I am interested in searching for clues about the effect of such futures: in what ways were they performative; what did they do?

Performativity on behalf of the future means that whenever a future is evoked, discussed or imagined, it shapes our present. This is not quantum physics bending the rules of time and space but a quite simple idea. For example, when a couple expects their firstborn child, they typically prepare for this event. Not because they know how the future will look, but because they have access to a repertoire of visions of a future life with children, and are able to use these as practical tools in contemporary navigation. In the words of Nik Brown, expectations and imaginative speculation are “fundamentally necessary real-time activities in order to mobilize the future into the present”.

My interest lies in the role of future expectations in technology development and innovation. Specifically, I explore the implications for the shaping of political regulation, or interventions in processes of technology implementation. In part, this interest was sparked by the prominence of future expectations in the analyzed empirical material. Equally important is an understanding of innovation- and diffusion as processes of *domestication* (Berker, Hartmann, Punie, & Ward, 2005; Brosveet & Sørensen, 2000; Skjølsvold, 2012a). Metaphorically, domestication is often described as a process of “taming” technology. In other words, “what” a technology could be; how it could be used and which meanings it assumes are not solely determined by technical qualities or design. Instead, technology users construct socio-technical practices and understandings in interaction with other actors, both human and non-human. One of the implications of this is that innovation processes do not end with “diffusion” or “deployment”. In principle, the innovation trajectory can last indefinitely, since there is no way of telling what users ultimately make of the technology. Similarly, an innovation trajectory does not necessarily begin with a blueprint or a working technological design. Images and ideas about “what” technologies are and how they could change the world are of equal importance. This means that the shaping of technological artifacts could begin before the actual “gadget” is produced as long as ideas about the gadget exist.

With domestication in mind it is important to account for what technical artifacts are understood to be; practically, symbolically and cognitively. As Robin Williams and David Edge have pointed out, innovation could be described as a ‘garden of forking paths’ (1996, p. 866). This means that there is some sort of agency and ‘choice’ behind the process of technology selection, and that choosing an alternative path is always an option. This is quite clear in the Norwegian case of advanced electricity meters. After all, a political decision of implementing (‘rolling out’) one type of technology is clearly an expression of articulated agency on behalf of those who wrote the regulation. They chose this path over an alternative path where the market would decide. But what was the role of future expectations in choosing one path over the other?

<sup>1</sup> Advanced electricity meters were intended to be rolled out by 2013. However, the regulatory requirements were subject to four years of controversy over specifications, standards and other technicalities before they were finally approved. The deadline for rolling-out was changed to the end of 2017, and has now been pushed back to 2019.

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