CHAPTER 5

Nostalgia

What Is Nostalgia, and What Types of Nostalgia Do We Find in Smart Grids?

The modern meaning of nostalgia is about happy memories of the past, a looking back to the past with longing and fondness, as the psychologist Constantine Sedikides explains, it is "a sentimental longing for one's past" (Sedikides et al., 2008, p. 305). It is a term normally used in a personal, individual sense to describe memories of the past and a longing for how things were. There are associations between nostalgia and homesickness. In fact, homesickness was the original medical meaning of nostalgia; from the Greek *nostos*, meaning return to home and *algos*, pain. Over time the meaning of nostalgia has changed; it has switched from a place to a time, and it no longer refers to illness. Historically the term nostalgia was always used in a negative sense—denoting difficulty living and thriving in the present moment, because of a sense of loss and a fixation on another place or the past, as the communication and media scholars Pickering and Keightley explain, nostalgia was characterised by "a defeatist attitude to present and future" (Pickering & Keightley, 2006, p. 920). But the contemporary meaning has shifted substantially, and it is now more about looking back to the past with fondness, as English literature scholar Dames eloquently describes:

H. Lovell, *Understanding Energy Innovation*,
https://doi.org/10.1007/978-981-16-6253-9_5

> Longing for the vanished past; a registration of loss that is nonetheless pleasurable, even an indulgence (Dames, 2010, p. 271)

Applying the idea of nostalgia to energy innovation might seem like quite a big leap, but there are connections between technologies and a longing for the past. Nostalgia can be applied to time periods or specific objects. Some people might have nostalgia for the era before the internet and widespread computing at home, a yearning for a simpler life without so much digital connectivity. Nostalgia can also be thought about at an organisational level, with organisations fixated on existing longstanding ways of doing things—looking to the past much more than to the future (Czarniawska, 1997). So nostalgia can act in opposition to innovation because of the desire for a return to older ways of doing things, as English literature scholars Atia and Davies (2010, p. 181) explain:

> Nostalgia is always suspect. To give ourselves up to longing for a different time or place, no matter how admirable its qualities, is always to run the risk of constricting our ability to act in the present.

Nostalgia is often a crucial part of narratives. You will see this in the narrative about off-grid households, discussed in the case study below (see also Case Study 4.3, Chap. 4). This narrative is a complex mix of nostalgia and innovation: nostalgia for a simpler way of life that is self-sufficient in resources but with innovation in the form of new battery technologies and electricity generation capabilities.

Different Ways of Thinking About Nostalgia

Nostalgia is about memories, so history and cultural studies are important areas of scholarship. For instance, a special issue of the journal *Memory Studies* (2010; Volume 3, Issue 3) is dedicated to nostalgia. The issue includes articles on a diverse range of topics, from the relationship between anthropological nostalgias and indigenous self-understanding (Whitehead, 2010), to the role of nostalgia in the notion of ecological sustainability (Davies, 2010). Nostalgia spans the disciplines of history and anthropology, literary criticism and art history, environmental and cultural studies, psychology, media studies, sociology, and political science. Nostalgia is, therefore, a highly interdisciplinary area of study, as Pickering and Keightley (2006, p. 922) explain:

> nostalgia has been used in many fields of study as a critical tool to interrogate the articulation of the past in the present, and in particular, to investigate sentimentally inflected mediated representations of the past

Psychological research into nostalgia draws on the origins of nostalgia as an illness, with a focus on the individual. Psychologists have found that nostalgia transcends different social groups and age categories and can be a positive experience that allows individuals to have resilience and cope with challenges (Sedikides et al., 2008). However, there are mixed views about nostalgia, and some see it as negative; as Pickering and Keightley (2006, p. 921) explain: "*Nostalgia can be both melancholic and utopian*." Scholars draw a distinction between personal and social (or historical) nostalgia (Routledge, 2015). The emphasis of research on social nostalgia is about how memories are generated within particular communities or cultures through the lens of nostalgia:

> nostalgia is read not only as a symptomatic state of mind, but also as a way of shaping and directing historical consciousness. (Atia & Davies, 2010, p. 182)

The influence on consciousness characteristic of nostalgia can be dangerous. It is possible to develop false nostalgia for time periods that never existed in the way people remember, as the psychologist Routledge explains:

> Perceptions of the past can… be inaccurate. Time allows us to make sense of and extract meaning from the past, but this process can also lead us to romanticize it. (Routledge, 2017)

Routledge explores how false nostalgia can be used as a political tool to subtly make people feel anxious and mobilise them into the desired action, noting how "nostalgia has the power to mobilize and inspire people when they are most vulnerable" (ibid.).

There is scholarship on the technologies of memory (i.e., the devices and things that help us to remember (see Van House & Churchill, 2008)), but very little existing research into the relationship between energy technologies and nostalgia. One example is research by Hanel and Hård (2015), who use the concept of nostalgia to examine nuclear power. They show how nostalgia for heavy-water nuclear plants in Sweden and West

Germany meant they were slow to take up new light-water designs. Another example, albeit outside of the energy sector, is research by anthropologist Ray Cashman (2006) on nostalgia for old farming equipment in a community in Northern Ireland. Old farming tools such as threshers have been restored and displayed by several community members, in the process helping the community to adapt to the pace of change and to resolve religious differences. Cashman finds positive meaning in the nostalgia within this rural area:

> The amateur curators of the Derg Valley's past material culture are not infected [with] an unthinking or merely sentimental nostalgia… they quite sanely challenge both the presumption that modernization equals positive progress and the impulse to romanticize the past. (ibid., p. 148)

In other words, nostalgia can be productive and does not necessarily have to be a negative influence on technological progress and innovation:

> Nostalgia may also be seen as seeking a viable alternative to the acceleration of historical time, one that attempts a form of dialogue with the past and recognizes the value of continuities in counterpart to what is fleeting, transitory and contingent. (Pickering & Keightley, 2006, p. 923)

Nostalgia can be applied to anything. It is something felt by those in exile and migrants towards their country of origin, as well as by individuals towards a technical object. It is also increasingly recognised that nostalgia can be quite radical (i.e., conducive to innovation), depending on what it is being applied to:

> Recent historians of nostalgia have shown persuasively that nostalgia can become creative or radical by virtue of its object, by its being nostalgic for anything from farming equipment in Northern Ireland to pre-scientific English agrarian socialism or the unfulfilled promises of the East German state. (Atia & Davies, 2010, p. 183)

This framing is relevant for considering the application of nostalgia to energy innovation and smart grids. Nostalgia for traditional ways of doing things in the energy sector and within the home can actively shape the innovation process, and not always in reactionary or retrogressive ways.

Case Study 5.1 Memories of Internationally Pioneering Smart Grid Experiments and Their Legacy

A handful of pioneering smart grid experiments is well known internationally by those working in the field. These include the digital metering program in Italy (the Telegestore project), California's smart grid program, and Ontario's grid modernisation program in Canada. Figure 5.1 below shows the timeline of these programs and other key international smart grid initiatives from 1999 to 2020. Although I use the term experiments, these examples are, in fact, diverse in origin and operation, ranging from innovative policy programs in diverse geographical areas (nation states, regions/states) to more discrete experiments in individual cities and smaller locales. Most involve a mix of public and private sector organisations, usually backed by public sector funding. What unites these smart grid experiments is that internationally they are well known and have been heavily profiled and discussed within the smart grid sector. These are early examples of smart grids—the first wave—and have become part of policy narratives about smart grids internationally.

What are the memories of these internationally pioneering smart grid experiments? What is their legacy? One notable thing regarding how they are talked about, which relates to nostalgia, is that they are mostly discussed in positive terms: they are remembered with sentimentality and fondness. For instance, the early smart grid program in California is

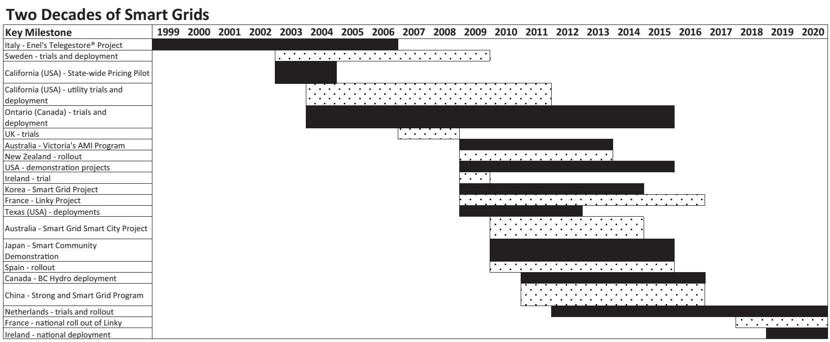

Fig. 5.1 Timeline of international smart grid projects. (From data analysis conducted by Dr Cynthia Nixon, University of Tasmania, 2020)

positioned by the International Smart Grid Action Network (ISGAN) as being a leader and outstanding:

> SDG&E [the San Diego Gas and Electric Company] stands out as having an outstanding AMI outreach and deployment methodology…. One of the early implementers, SDG&E… [were] the first utility in the USA to cover their entire service territory with gas and electric smart meters…SDG&E also did two years of deep design work prior to doing any deployment. Customers were even involved in a co-design process prior to the first AMI deployment in 2009….Unsurprisingly, in California and the broader USA, SDG&E is known as a leader in AMI and smart grid for customer engagement. (ISGAN, 2014, p. 98)

ISGAN similarly describes the national Telegestore digital metering program in Italy as an innovative program that was a forerunner of things to come, allowing savings of 500 million Euro per year (ISGAN, 2019). Telegestore was "a revolution, not only in the technology, but also in the business processes, starting from the relationship with customers" (ibid.).

It is notable how often particular smart grid experiments are discussed; the same ones keep appearing in reports and reviews (see also Case Study 2.1). In this way, a handful of early smart grid experiments have shaped policy narratives about smart grids. Certain international organisations such as ISGAN and Mission Innovation, as well as the energy sector media, have played a central role in interpreting and framing these smart grid projects in positive ways. They have shaped the social memory of early smart grid projects, creating a form of false nostalgia (Routledge, 2017).

Smart grids nostalgia reflects with sentimentality on the early smart grid trials. Its storyline is that 'smart grids are do-able and bring lots of benefits—move early and you can be like these places, you can be internationally renowned'. This storyline provides positive motivation for other places to take action and to look on these early examples with admiration and a desire to replicate them. However, it also creates some problems because these pioneering smart grid experiments did have set backs. But the formal documented case studies of these experiments that populate reports and smart grid reviews have omitted these less positive aspects in favour of the nostalgic positive narrative (see also Case Study 4.2).

For instance, Pacific Gas and Electric (PG&E) utility in California had a high number of customer complaints in response to its smart metering program, which commenced in 2007. These complaints rose to such a high level that the Californian Public Utility Commission set up an inquiry to investigate, which identified a number of problems with the approach of PG&E, including:

> PG&E processes did not address the Customer concerns associated with the new equipment and usage changes. (Structure Consulting Group, 2010, p. 9)

> PG&E's system tolerances related to billing quality control were not stringent enough, resulting in multiple bill cancelations and re-billings, which were confusing to Customers. (ibid., p. 9)

The PG&E smart grid program cost considerably more than other Californian utilities, and the benefits were no way near as high. The costs of PG&E's program were reported as US$831 Million and benefits only US$19.6 Million (CPUC, 2016). By comparison, the other two utilities in California had higher benefits than costs for their smart grid programs.

The lack of widespread reporting of problems with pioneering smart grid programs leads to false expectations about the ease of implementing smart grid programs and projects—it is made to seem easier than it actually is—and learning from these pioneering energy innovations is hampered because the things that did not work are not talked about. However, as discussed in Chap. 4, usually, it is the things that did not work that we can learn the most from.

Case Study 5.2 Scarce Data and Off-grid Households in Australia

Australia is one of a group of countries at the forefront internationally of off-grid households because of its high penetration of rooftop solar and a very stringy grid (ENA, n.d.). Over a fifth of households in Australia now have solar installed: the highest proportion in the world (Australian PV Institute, 2019). The rate of rooftop solar uptake in Australia has been identified as a significant factor in the declining demand for electricity from the grid (AEMO, 2014, p. 5). Between 2009 and 2016, demand from the grid within Australia's National Electricity Market fell by 8% and is now expected to stay flat for the next twenty years (ibid., p. 4). The high rate of adoption of residential rooftop solar is anticipated to be repeated in the uptake of battery storage, with more efficient and affordable battery storage increasingly available in Australia. Over 31,000 batteries were installed by households in Australia in 2020, a 20% increase on installations in the previous year and up from 6750 in 2016 (Sunwiz, 2018; Vorrath, 2021).

However, even in Australia, with these fast-moving household changes, there is little data on who is off-grid. Data is not being actively collected on off-grid households because it is not thought to be happening at any significant scale. Energy utilities and other energy sector decision makers who nostalgically focus on the past and the way things used to be done, that is, supplying households with electricity from the grid, are gathering data on the electricity grid, but not on other types of electricity generation and supply. Australian studies of off-grid households are predominately about the economics of moving off-grid (Graham et al., 2015; Szatow & Moyse, 2014). The emphasis has been on modelling future scenarios but based on assumptions rather than actual data (see e.g., Brinsmead et al., 2015; Clean Energy Council, 2015; CSIRO, 2013). Off-grid households are an instance of *scarce data* (a contrast to the dominance of *big data* in modern society).

Along with a colleague (see Lovell & Watson, 2019; Fig. 5.2), I researched the availability of data on off-grid households in the State of Tasmania, Australia, to explore whether there was sufficient data to answer this question: how many households are currently off-grid in Tasmania? We found a wide variety of estimates of how many households were already off-grid in the State, ranging from 200 to 10,000. Our findings suggest considerable uncertainty in the data on off-grid households and an overall lack of data.

Our research also showed that a new generation of households is moving off-grid primarily for financial reasons (Lovell & Watson, 2019). For instance, one householder described how:

> we basically have free power. The initial cost was what we were going to spend anyway [on connection to the grid]. There are no ongoing costs for us, other than battery replacement at some point down the track, as all off-grid systems will have to do at some point. (Interview, October 2015)

Our research on Tasmania suggests that the framing of off-grid data collection in Australia remains nostalgically centred on the existing utilities and large-scale centralised energy infrastructure. An absence of data is a problem for energy sector innovation. It acts as a barrier to effective

Fig. 5.2 Image of solar panels at an off-grid home in Tasmania, Australia. (Source: Heather Lovell, University of Tasmania)

governance: the issue is not visible and is therefore not discussed by policy makers. Policy making is skewed towards governing data-rich policy areas. In the energy sector, this favours existing energy institutions, technologies and cultures, creating inertia and nostalgia, and making radical innovation difficult to achieve (Hughes, 1983). The role of data in creating opportunities for change is important, as the social scientists and critical data scholars Kitchin and Lauriault (2014, p. 4, emphasis added) explain:

> data are constitutive of the ideas, techniques, technologies, people, systems and contexts that conceive, produce, process, manage, and analyze them… **Data do not pre-exist their generation; they do not arise from nowhere and their generation is not inevitable**: protocols, organisational processes, measurement scales, categories, and standards are designed, negotiated and debated, and there is a certain messiness to data generation.

There have been several new energy sector policy initiatives in Australia since 2015 which recognise the general problem of lack of data visibility. These are not about off-grid data specifically but nevertheless provide some indication of increased policy attention to what we might call nostalgic data gaps. One example is the 2017 *Independent Review of the Future Security of the National Electricity Market in Australia* which placed a high priority on improving distributed energy resources (DER) data, including battery storage, explaining that:

> At present, AEMO [the Australian electricity market operator] lacks sufficient visibility of DER, which makes it difficult to manage the power system effectively. (Finkel, 2017, p. 32)

> The uptake of new technologies is putting residential, commercial and industrial consumers at the centre of the electricity market… [DER] such as rooftop solar photovoltaic and battery storage systems … can all be harnessed to improve the reliability and security of the electricity system. **Improved access to data is needed to assist consumers, service providers, system operators and policy makers**. (ibid., p. 137)

The Australian electricity market operator (AEMO) has since set up a national DER register; from March 2020, all new DER connected to the electricity grid in Australia must be registered (AEMO, 2021). Some Australian energy utilities are starting to support off-grid households and collect off-grid data. For instance, Ergon Energy provides information on its website to support households making decisions about staying on or leaving the grid (Ergon Energy, 2018b). Horizon Power and Western Power are conducting trials supporting a small number of households to leave the grid in remote edge-of-grid areas in Western Australia (Ergon Energy, 2018a; Horizon Power, 2018).

Nostalgia can promote the continuation of past ways of doing things, often referred to as path dependency (Berkhout, 2002), which hampers innovation. In the case of off-grid households, a nostalgic approach to collecting data about the electricity grid might well be blinding us to significant off-grid changes already happening in Australia.

Case Study 5.3 Nostalgia for Big Infrastructure: Tensions in Planning for the Future of the Grid in Australia

In Australia, there are many different ideas about the future of the electricity grid. Some see the future of the grid as being splintered, decentralised, populated by smaller micro grids and many more off-grid industries and households (see e.g., AECOM, 2014; Szatow & Moyse, 2014). Another version of the future, and a version that has dominated mainstream government and utility planning in Australia over the past few years, sees the electricity grid as not only remaining in place but strengthened. In this case study I focus on the latter version of the future—a future with greater interconnection—by examining the role of nostalgia in energy system planning in the Australian State of Tasmania.

The island State of Tasmania has been connected to mainland Australia with an undersea electricity cable (the Basslink) since 2006. In recent years, there has been planning and discussion about adding a second undersea cable (the Marinus Link) to boost Tasmania's capacity to export its renewable electricity (TasNetworks, 2021). Tasmania generates 100% of its electricity by renewable energy (mostly generated by large-scale hydroelectricity plants, the majority of which were built in the 1940s and 1950s). There are also plans to build new pumped hydroelectricity ('pumped hydro') storage plants in Tasmania, using the existing infrastructure to provide large-scale electricity storage. These pumped hydro plans are tied up with Marinus Link because both rest on the idea of Tasmania being able to provide more energy services to mainland Australia through enhanced electricity grid transmission. As another layer to all this big infrastructure planning in Tasmania, the state government recently announced Tasmania's intention to double its renewable electricity generation by 2040: an extra 10,500 GWh per year (Tasmanian Department of State Growth, 2020).

Tasmania's plans rely on the continuation of a centralised electricity grid across Australia, that is, business as usual within Australia's electricity market, the NEM. Indeed, Tasmania is closely following the NEM Integrated System Plan developed by AEMO (see Case Study 3.2). Within AEMO's Integrated System Plan, there is an emphasis on building stronger electricity interconnections between the Australian states that are part of the NEM, as it explains:

> The projected portfolio of new resources involves substantial amounts of geographically dispersed renewable generation, placing a greater reliance on the role of the transmission network. **A much larger network footprint with transmission investment will be needed to efficiently connect and share these low fuel cost resources**. (AEMO, 2018, p. 6, emphasis added)

The State of Tasmania is one of the NEM states that is planning for greater interconnection. The estimated cost of Project Marinus is A$3.5 billion (TasNetworks, 2020, p. 5), so if the centralised grid system in Australia erodes, then this big infrastructure investment will have been a very costly mistake. Possibly it is worth taking this risk, as there are significant opportunities for Tasmania if electricity storage is required at a large scale by the grid several years hence, when as much as 12,000 MW of coal-fired power station capacity will be retired (TasNetworks, 2020, p. 2). A key question though is whether Tasmania's planning is being driven, at its heart, by nostalgia. Clearly, there are several practical considerations around how best to manage uncertainty and disruption in planning for Australia's energy future, and, given the large sunk costs in existing energy infrastructure, it makes sense in lots of ways to continue investing more in this existing infrastructure. But is there also a more emotional, nostalgic aspect of this 'big infrastructure' planning? There are a number of signs that this might be the case. First is the absence of any other versions of the future in the Tasmanian Renewable Energy Plan (e.g., a decentralised grid, a self-sufficient energy island). Throughout the Tasmanian Renewable Energy Plan, it is assumed that a strong, national transmission system will be important to Australia in the future, and no other versions of the future are considered. Second, there is a clear nostalgic evoking of the past in the Plan, with the benefits of historical large-scale investment in hydroelectric infrastructure mentioned frequently, for instance:

> Tasmania has **a long history of major industrial development powered by renewable energy** and there are major opportunities for the establishment of jobs-rich, large-scale, energy intensive enterprises in the state (Tasmanian Department of State Growth, 2020, p. 45, emphasis added)

This indicates nostalgic thinking in relation to the electricity grid. The historical renewable energy referred to in the quotation above is Tasmania's extensive network of thirty hydroelectricity power stations, which were developed mostly in the period 1930 to 1960 (Hydro Tasmania, 2014).

The resulting plentiful and relatively low cost electricity attracted a number of large international industries to the State, including a zinc smelter, pulp and paper mill and aluminium smelter. These large industries still reside in Tasmania, and constitute around half of Tasmania's electricity demand. The nostalgia stems primarily from this era of hydroelectricity development and subsequent economic growth. It is a form of *institutional* nostalgia, with the government-owned utilities and the state government promoting a version of the future in which the electricity sector once again acts as the principal driver of economic development.

In Tasmania's planning for Project Marinus and other energy infrastructure investment there is an underlying expectation that the electricity grid will continue as in the past, but with even more investment in infrastructure—a *gold plating* of the grid so that it keeps up with a host of disruptive innovations such as decentralised generation and storage. This version of the future might indeed come to pass. However, it is a version of the future that is heavily path dependent, and history tells us that infrastructure systems do periodically have radical breaks from the past (Bridge et al., 2018; Hughes, 1983). For example, one alternative scenario is that the Australian states revert back to more state-centred electricity systems, rather than focusing so much on investment in the NEM. Australian states have sovereignty over their energy systems and the NEM operates on a consensus model, therefore its authority could be eroded. AEMO's Integrated System Plan promotes the efficiency of sharing electricity across state boundaries, but there is an alternative future wherein the Australian states revert to operating more in isolation, because increasingly they have stronger technological capability to do so, as renewable generation and battery storage increase (an example of this is the South Australia's Hornsdale Power Reserve (see ARENA, 2020)).

Learning from Smart Grids and Nostalgia

Nostalgia can influence contemporary energy sector innovation through its promotion of, and attachment to, sentimental or romanticised versions of the past. As we see in the case studies presented in this chapter, it can prevent us from learning from the mistakes and failures of past energy innovation (pioneering smart grid experiments) and encourage potentially risky future energy innovation by prioritising past desires and needs (large-scale transmission infrastructure). In the table below, I summarise the key learnings from these case studies and suggest how they might guide future practice.

Key learning	*Recommendation for energy practitioners*
The past has influence in all sorts of ways in energy, not just in terms of the technical legacy of infrastructure, but also cultural and emotional attachments to ways of seeing things and what is judged to be important. This influence affects what problems are identified and the types of solutions proposed.	Consider how the centralised grid version of the future is heavily influenced by nostalgia. In other words, it is about maintaining an existing way of providing electricity, promoting a continuation of infrastructure, flows of capital and organisations. It is a risky strategy because it involves high investment up front in the face of a very uncertain future, with declining electricity demand from the grid and an increase in a host of new decentralised technologies. Caution should be applied to backing this version of the future, which is judged to be driven at least in part by nostalgia.
Nostalgia helps explain why many innovations are not initially seen or made visible and why there might be a reluctance to engage with them.	This situation can result in scarce data on fast changing aspects of the energy sector. Scarce data acts as a barrier to effective governance and results in energy policy making skewed towards governing data-rich policy areas. High-level mapping of existing and future energy activities, technologies and processes and their associated data should be undertaken to identify instances of scarce data. This could be conducted by existing energy data organisations (such as CSIRO Data 61 and AEMO in the Australian context).

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