



BOOK REVIEWS

Anticipating Interruptions - Security and Risk in a Liberalized Electricity Infrastructure

Antti Silvast. Unigrafia, 2013.

by Björn Wallsten

Paul Edwards, historian of technology, once wrote: "perhaps 'infrastructure' is best defined negatively, as those systems without which contemporary societies cannot function" ([Edwards 2003, 187](#)). Given such a pivotal but backstaged role in the technological machinery of modernity, Finnish sociologist Antti Silvast chose topic wisely for his dissertation *Anticipating Interruptions - Security and Risk in a Liberalized Electricity Infrastructure*. The risk dynamics of infrastructure provision open up several possibly juicy empirics in a world of malfunctioning infrastructure systems where the task to make sure that things don't malfunction, i.e. black out, is of course of significant strategic importance.

There is a definite set of virtues with Silvast's dissertation, as he goes at it from a cross-disciplinary angle of history of technology combined with risk sociology and a distinct flavor of market-oriented STS. The dissertation is methodologically rich and empirically vast, as it in sequence accounts for the Finnish "security of supply"-history using policy documents and participatory observations at electric infrastructure security seminars (chapters 4 & 5), describes the socio-material market practices in two electricity control rooms using a semi-ethnographic approach (chapters 6 & 7), and surveys lay Finns' blackout awareness and preparedness measures (chapter 8).

As Silvast is a bona fide sociologist rather than historian, the most intriguing analysis is served as we are allowed into the control rooms of a Finnish utility company. Because of Silvast's previous career in the electricity sector, these sections are not only an example of what access to an enclosed location can bring to social research in general but more specifically reveal seldom displayed inner mechanics of the amalgamated techno-economic assemblage that is our contemporary electricity system.

For someone interested in becoming an active agent on this market, e.g. in becoming a prosumer (producer/consumer) by installing solar panels, these chapters provide discouraging news. The market machinery is far from a lean and straightforward process of buying and selling, but instead a complex apparatus forcing utility companies to hire a stockbroker-trained workforce on a 24/7 basis. It is furthermore not one but two markets (Elsport and Elbas) that must be surveyed online on fourteen synchronized real-time screens, requiring continuous work in shifts. The key ingredient in the control room work practice is thus hours and hours of monitoring while staying alert to any alterations among the predictive indicators. The chances for a small seller to get the best price for her or his produced electricity in such a market configuration seem

slim, not the least since there is information that in many cases are for the utility companies' eyes only. Using software based market devices does not seem to be an option either, as one of Silvast's informants reveals that "they have not succeeded in developing reliable prediction software for this (work). Something was developed recently, but it did not turn out to be better than we are." (p.126).

On the more critical note, I have one remark on Silvast's conceptualization of risk and some general reflections on his central topics of liberalization and infrastructure risk.

If, as Silvast does (p.167), you interpret your respondents as being engaged in risk management activities regardless of whether they themselves acknowledge this or not (i.e. they might not speak of their own actions in terms of risk management), then this should be accompanied with a careful operationalization of the ambiguous risk concept to know what counts as a risk management activity and what does not. Such an operationalization would have been beneficial for the thesis, since the risk conception as it reads now fluctuates between the different sites of investigation and comes across as first and foremost a messy practice enmeshed in habits, discourses and quasi-objects.

Let me exemplify. In technical terms, risk is often defined as the likelihood of a disruption occurring multiplied by the damage the disruption inflicts in societal terms. From this follows that risk mitigation is a two-front endeavor; you might take measures that decrease the possibility of disruptions occurring (equivalent to increasing the robustness of an electric grid to prevent critical events from happening), or you might take measures to decrease the magnitude of disruptions (equivalent to increasing the resilience of an electric grid to mitigate the critical events' consequences). In practice, it might be hard to distinguish risk management measures in such dualistic terms, but they are nevertheless conceptually different strategies that are differentiated in strategic documents concerning electricity security (cf. the Swedish definition of "security of supply", comparable to the Finnish "huoltovarmuus"). While Silvast rejects such a technical conceptualization (p.14), he recognizes (p.149) the phase-approach to disaster and crisis put forward by Perry ([2007](#)), according to which a crisis first escalates, then occurs, and is lastly followed by a phase of recovery. Notably, this approach acknowledges the importance of differentiating between the before and after of critical events in the same way that the technical conceptualization of risk does. In risk management terms, the phase-approach can easily be transposed to matters of robustness (corresponding to the prevention of crisis escalation)



and resilience (corresponding to improving the recovery process after the event has occurred).

Given a more pivotal role in the assessment, an emphasis on the robustness/resilience parlance or a more thorough use of Perry's phases could have ameliorated the analysis in three different ways:

First, it could have sharpened some of Silvast's sometimes too vague interpretations. For example, a quote from the CEO of an electrical company: "Major blackouts are rare, but still possible and if they occur, lacking preparedness and anticipation could mean that we shall really have fatalities." is interpreted by Silvast as "To him, the prevention of major blackouts was hence all about improving human vitality and health." (p.87). When the CEO here speaks in resilience terms (i.e. preparedness for the recovery phase of blackouts), Silvast's conclusion concerns robustness (i.e. prevention of the escalation of blackouts), which is imprecise.

Second, it could have enabled a comparative analysis of the differences between managing what Silvast without very explicit explanations terms "market based risks", "technical risks", "security risks" and "financial risks" (cf. p.143).

Third, it could have added a dimension to Silvast's description of the Finnish "security of supply"-history of how risk management is historically contingent, and how major changes in risk management strategies tend to correlate with the occurrence of critical events. Some examples of this are explicitly mentioned, as Silvast for example recognizes that World war II and the energy crises of the 1970's had bearing on the national Finnish risk awareness, whereas the critical events that have occurred since then are given much less importance. The two major storms "Pyrä" and "Janika" that struck the Finnish grid in 2001 are for example never linked to the increased attention to risk management policies by the Finnish government in the early 2000's, and we are not served any blackout frequency statistics to get a picture of how the Finnish dependence on the availability of electricity have increased over time and how this is correlated to an increased criticality of blackout events. A description aware of the differences between robustness/resilience-measures could have distinguished between how priorities in risk management strategies display paradigmatic characteristics over time.

The reason for why this third point is important relates to the larger picture of liberalization and risk in electric infrastructures, which leads me to some concluding remarks on Silvast's dissertation as a political project.

Most explicitly, it is the control room parts of the dissertation that reveal Silvast's political stance as revelational rather than normative. As such, it is similar to market-sociologist Donald McKenzie's (2009: 184-185), in that it aims to describe the nuts and bolts of market mechanics with the ambition to make them public knowledge, rather than taking an explicit pro- or anti-market

stance. While such a research positioning is a matter of personal judgment, it comes across as slightly misguided when Silvast attempts to disavow marketization as a scapegoat that gets the blame for causing blackouts (p.94), by scaling down the issue to a matter of how insurance based market mechanics play out in electricity control rooms. Such a limited perspective might of course be interesting in itself, but is not sufficient to paint a nuanced enough picture of blackout responsibility and infrastructure risk management at large. Concerning this, I believe that Silvast fails to recognize the paradigmatic changes in risk dynamics caused by the marketization that are for example detectable in the technical provision of the electric grid. The Swedish case provides interesting insights in this respect.

A systems analyst at the Swedish Energy Agency once stated that "Security of supply-wise, I would say that Sweden peaked in 1985" (Berglund 2009), i.e. in a time when risk management was a state responsibility in a monopolistic system. In robustness-terms, the energy system then produced more than enough electricity (the last two of Sweden's twelve nuclear power stations had recently been installed) while maintenance was prioritized to an extent that allowed for preemptive measures to keep the grid in good shape. In resilience-terms, the power reserves were extensive (with regards to installed capacity) as well as diverse (they relied on different kinds of fuels). In relation to such a backdrop, liberalization could thus be argued for based on the fact that the monopolistic configuration was indefensibly expensive and inefficient. A case for deregulation could thus be made by emphasizing the so-called "over-maintenance" with co-joined arguments on how private actors would lower the total costs of electricity provision through efficiency measures.

Such measures were also implemented after the Swedish deregulation, as the robustness since then has decreased in a system set to run closer to its limits (Berglund 2009) and as short-term procurement contracts has been introduced to cut maintenance costs (Wallsten 2013). Based on the Swedish experiences some twenty years later, there is reason to argue that such a short-sighted mindset has shifted infrastructure risks forward in time as system parts installed today will have shorter life spans and break down more often since they are installed under severe time- and cost-pressures and run with higher loads than dimensioned for. While these Swedish observations of decreased system robustness can only be affirmed in the future, they outline a shifted risk management dynamics directly related to the deregulation of the electricity system. In essence, the privatized configuration requires a revision of risk management writ large, not the least given the plethora of new actor constellations, contract agreements, decreased possibilities of centralized planning etc. The mechanics of such rearrangements are unfortunately left out of Silvast's description, resulting in the loss of an important contextual aspect and a backdrop that would have corresponded well to the promises made by the dissertation's subheading: "security and risk in a liberalized electricity infrastructure".



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