Policy and Society

ISSN: 1449-4035 (Print) 1839-3373 (Online) Journal homepage: http://www.tandfonline.com/loi/rpas20

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To cite this article: Martijn Van Der Steen, Jorren Scherpenisse & Mark Van Twist (2018) Anticipating surprise: the case of the early warning system of Rijkswaterstaat in the Netherlands, Policy and Society, 37:4, 473-490, DOI: 10.1080/14494035.2018.1520780

To link to this article: https://doi.org/10.1080/14494035.2018.1520780

Published online: 30 Sep 2018.

POLICY AND SOCIETY
2018, VOL. 37, NO. 4, 473–490
https://doi.org/10.1080/14494035.2018.1520780

Routledge
Taylor & Francis Group

ARTICLE

Anticipating surprise: the case of the early warning system of Rijkswaterstaat in the Netherlands

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ABSTRACT

Policy often has to perform amidst uncertain and rapidly changing conditions. Robustness is the ability to perform and achieve intended effects under unknown conditions. Robust design can benefit from the capacity to anticipate developments early. A system of early warning is a method to anticipate change early and help policy design to be more robust. Early warning can enable moment of 'consecration', moments where reflection on assumptions and biased of policy design can be challenged and changed; this can be an important addition to the robustness of policy design. However, early warning is not unproblematic; it is an organizational practice that inherently invokes issues of habituation, organizational bias, as it challenges the status quo. In this paper, we study how policy makers who 'do' early warning in the context of robust policy engage with these issues and how they managed to improve the robustness of policy design. We do so by studying an empirical case of an early warning system in The Netherlands. We analyze how the system was build, how it worked, how it was further professionalized, and what the system did to the capacity of the organization to design and deliver robust policy.

KEYWORDS

Policy robustness; policy design; habituation; innovation; early warning

Introduction

Conditions for policy change often and unexpectedly (Head & Alford, 2013; Howlett, Capano, & Ramesh, 2018; Peters, 2017). The more a policy is intended to be more than a quick fix, the more it is important to take changing conditions into account in the policy-design (Capano & Woo, 2018a, 2018b; Peters et al., 2018). This Special Issue looks at 'robustly designed' policy to deal with uncertainty and surprise (Capano & Woo, 2018a, 2018b). The literature on robustness and resilience presents a wide range of meanings of these concepts (Boin & van Eeten, 2013; Välikangas, 2010; Walker, Haasnoot, & Kwakkel, 2013), but here we follow the definition of robust policy design that is used in this Special Issue (Capano & Woo, 2018a; Howlett et al., 2018); *to design policies capable of maintaining the same performance in the face of internal or external perturbation*. Robustness is the capacity of policy to deliver results in a situation where

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services and future scenarios are unknown, contested, or unpredictable. Robust policy *design* is the ability to intentionally 'build-in' this capacity into policy.

This paper examines a specific capacity for a robust policy design; the anticipation of possible future dynamics, by means of deliberately looking for *early signals* for emerging threats or opportunities. Early warning can be separated into three elements; (1) noticing developments early, (2) assess possible meaning(s) for policy and (3) draw up a proper response. This can be done generically, but also ad hoc, for instance in a coherent program of various policies, as is done in the *Delta Programma for Climate Adaptation* in The Netherlands (Haasnoot, Kwakkel, Walker, & ter Maat, 2013; Walker et al., 2013). In this paper, we look at a generic *early warning system (EWS)* of an organization that is responsible for the design and execution of a wide range of policies (Splint & van Wijk, 2012); the system is not related to one specific policy, but looks at early warnings for an organization that is responsible for designing and executing a range of different policies. We are interested in how such a system works, and in the practical dilemmas that arise of such a system that works in the context of an existing organizational with its own dynamics, history and preferences.

Even though it seems self-evident to look for early warning – who does not want to be informed early about relevant future developments? – early warning is not unproblematic. In order to look for early warning an organization needs to overcome ingrained ways of thinking and acting, and surpass routines and habits (Delacour & Leca, 2017; Herepath, 2014; Hodgson, 2007; March & Olsen, 1989; Scott, 2001; Streeck & Thelen, 2005). Early warning involves looking beyond information biases, interpret ambiguous signals and take actions that defy common-logic rules and norms of appropriateness in the organization (March & Olsen, 1989; Scott, 2001). This draws attention to issues of positive feedback, path-dependency, habituation and the ability of agents to look beyond structural biases of themselves and of the organization; what do these organizational conditions mean for the workings of an EWS and the use for it as a tool for robust policy design?

To further investigate these issues, we study a case of a large organization, *Rijkswaterstaat (RWS)*, the Agency for Public Works and Water Management in The Netherlands, that upholds a system of early warning to design robust policy. We are interested in looking into how the system was created, how it evolved and we want to learn how issues of structural bias were addressed. Therefore, the research question that guides this paper is as follows;

> *How do early warning systems help to achieve robust policy design, and what are dilemmas or complexities that arise when 'doing' early warning' in an existing organizational context?*

The remainder of our paper is structured as follows. First, we build a framework for analyzing systems for early warning. Second, we study an exemplary case of an EWSs at *Rijkswaterstaat*, the Agency for Public Works and Water Management (further referred to as *RWS*) in The Netherlands. We discuss the structure of the system but also look at the workings and dilemmas of the system. Finally, we critically discuss what the case teaches us about systematic early warning as a possible means for robust policy design, and we look at the organizational dilemmas that this type of system raises.

Theoretical framework

The essence of early warning

An EWS is an instrument to prepare for unknown futures (Ansoff, 1975; Splint & van Wijck, 2012; Bell, 2003; Noordegraaf et al, 2014; Ilmola & Kuusi, 2006; Comy & Whyte, 2017; Rossel, 2012). The fundamental assumption of an EWS is that although the future is principally unknown developments and shifts are noticeable beforehand in 'early signals' that can be collected and interpreted to anticipate the future (Ansoff, 1975; Botterhuis, van der Duin, de Ruijter, & van Wijck, 2010; Bovens & 't Hart, 1996; Splint & van Wijck, 2012). Comy & Whyte (2017, p. 1057) argue that an EWS allows actors *'to see through the apparent confusion, to spot developments before they become trends, to see patterns before they fully emerge'*. The purpose of early warning is not to predict the future, but to prepare the organization for a range of options of what might happen in the future.

A system of early warning helps an organization to bring strategic focus to the orientation towards the future (Splint & van Wijck, 2012; Ho, 2012). It helps to prepare for possible upcoming futures, and some possible developments might be stopped before taking full flight (Botterhuis et al., 2010; Ilmola & Kuusi, 2006; Mendonca et al., 2009; Splint & van Wijck, 2012). As mentioned in the introduction, early warning consists of three connected capabilities (Splint & van Wijck, 2012); (1) the ability to detect and (2) appraise changing conditions early and (3) the ability to respond in time to the changes detected. A functioning EWS requires the ability to collect 'the right' type of information, to interpret the possible meanings of a signal for policy, and to formulate possible responses to act.

It is important to note here that *early* is a relative concept; late and early are temporal notions that depend on the lead time of a response (Poli, 2017). The 'longer' (or 'slower') the lead time of a response – for instance the redemption of a mortgage – the farther away in time 'early' is; when lead time is 'very short' (when the response is 'very fast') – like the blink of an eye – 'early' can be microseconds away. Early is also relative to the development itself; if a trend is fast-moving, then there is little time to act and 'early' can be quite late; if a trend is slow-moving according to a stable pathway, early indicators can be closer in time in order to still provide enough time for an appropriate response.

A similar note is needed for the concept of *warning*. Warning is as a signal of an imminent negative development. However, the meaning in the context of 'early warning' is neutral (Splint & van Wijck, 2012); a warning is a signal of a trend that is relevant for a system or policy. Relevance can be positive, negative or undefined. A warning can point at a threat, but also to an opportunity to make unexpected progress. In the context of this paper we look at warnings as signals relevant to at least sustain and perhaps enhance the expected performance of a system; warning can refer to opportunity and to threat.

A final note should be made as to what 'counts' as a signal or a warning, and where to find them. Signals and warnings can be newly emerging trends, or events, for instance 'Black Swans' (Taleb, 2007) or 'Wild Cards' (Bell, 2003). But signals can just as well be slow-moving developments that evolve below the surface but may in time constitute an entirely different context for a policy to work from. Population ageing is

an interesting example of this; even though demography is in itself a highly foreseeable development, but it took many policy makers a long time to fully recognize the possible meanings and consequences of the trend (e.g. Veenman, 2013). Moreover, signals can also point at internal developments in the organization or policy. In foresight studies a metaphor of a crows-nest on a ship is used often; signals can be about developments far away on the horizon, about developments right around the ship, and also on developments on (and also below) deck. Early warning is not limited to looking far-away 'out', but also to looking around and within.

Early warning as habituated strategic practice

An EWS can be studies as an object, but here we approach it is an activity; we look at an EWS as a *practice* (Jarzabkowski, 2005; Noordegraaf, van der Steen, & van Twist, 2014; Whittington, 2003, 2006). Early warning is what people in an organization do, rather than an object an organization has. The 'strategy-as-practice' school of strategy research takes up this view extensively in it study of strategy, or *strategizing* as they prefer to call it (Jarzabkowski, 2005; Johnson, Langley, Melin, & Whittington, 2007; Whittington, 2003, 2004). To study strategizing, one should look at the elements that constitute practice; such as the actors involved (strategists) (Angwin, Paroutis, & Mitson, 2009), work practices (Jarzabkowski, Balogun, & Seidl, 2007), routines (Feldman & Pentland, 2003), and discourse and language (Mantere & Vaara, 2008); who are 'doing' early warning, how do they do it, what do they do when they are looking for early warning, and what narratives and concepts are used in the process of doing it?

The practice-perspective calls attention to the institutional context that embeds practice; actions of *agents* should be understood in the context of the *structure* from which, or within, they operate. Studies of practice look intensively at the structural conditions people *engage* with when they 'do strategy' (Whittington, 2007); e.g. organizational norms, social norms, scripted behaviours (procedures, designated roles, meeting agendas), scripted settings (e.g. meetings, away-days, workshops), 'strategic' organizational routines. Moreover, more general structural conditions also affect the workings of strategic practice; strategic work is part of a broader cycle, for instance a four-year cycle of a new Cabinet, or an annual cycle of budgetary planning (Noordegraaf et al., 2014). These structures constitute a context in which agents engage in ambiguous strategic work; in this case the collection, appraisal and response to ambiguous early signals.

As we will discuss more thoroughly in the next section, the structural context is very relevant for the workings of strategic practice. It is a helpful and enabling constitution for agents; it provides cues for sensemaking that enable strategists (agents) to make sense of ambiguous and fuzzy 'signals'; it provides a source of stability that guides coherent action in ambiguous strategic work, such as strategy-meetings or sessions with the leadership of the organization; and structure is an enabling factor that brings strategists in the position to act, for instance by allowing strategists access to the organizational elite, by clarifying their position towards other colleagues in the organization, or by placing them in a formal position to give mandatory advice (Weick, 2001; March & Olsen, 1989; Noordegraaf, 2007; Jarzabkowski, 2005; Whittington, 2003; Feldman & Pentland, 2003). At the same time structural conditions are also limiting

for strategizing; e.g. structural conditions set boundaries to ground strategists can cover when they look for signals and interpret them. We go deeply into this relation, and the consequences it has for the practice of early warning, in the following section.

Early warning as spaces for reflection on structural conditions

There is much debate about the relation between structure and agency in social action (Hodgson, 2007; Giddens, 1979; Douglas, 1986; March & Olsen, 1989; Herepath, 2014). In this paper, we primarily adhere to 'structuration theory' by Anthony Giddens (1979) that seeks a middle ground between the structuralist and individualistic approaches to the relation between structure and agency (Hodgson, 2007); structuration theory sees agency and structure as mutually constitutive (Giddens, 1979). Agency is free *and* constrained; structure directs human action, but is also 'carried' and embodied by agents who could change it by simply behaving differently (Rasche & Chia, 2009). The guidance of structure for agents is generally implicit and 'self-evident' for agents, but agents can also be reflective of structural conditions (Giddens, 1979; Herepath, 2014; Hodgson, 2007).

Rasche and Chia (2009, p. 718) discuss the relation between structure and agency in strategic practice by means of the concept of *habitus*; 'a system of structuring dispositions that operates beyond an actor's consciousness and thus beyond his or her deliberate control (Bourdieu, 1979, 1992; Bourdieu & Wacquant, 1996)'. Rasche and Chia argue, in the tradition of Bourdieu, that social practices are nested in a habituated scheme; a habitus. A habitus is not 'general', natural or external, but is *historical-contingent* and *embedded* in a particular social context. Habituated schemes are evolving along the way, also in relation to the actions by agents 'within' the habituated space.

Structuration theory and the notion of habitus are helpful for analysing the workings of an EWS for several reasons. Agents engaged in early warning are at the same time bounded by the contained space 'structure' leaves them for strategic deliberation, and are also enable by structural conditions to look beyond boundaries and to take innovative paths (Delacour & Leca, 2017; Streeck & Thelen, 2005). The structural context also enables them to act 'strategically'; the structural conditions of an EWS, or a strategic practice, creates a context for 'different' types of information, interpretation and deliberation. Delacour and Decla (2017) argue that agents who want to influence and overcome limitations of structural conditions need to look for a balance between *legitimacy* and *distinction*; strategic ideas should be distinct enough to be different from existing repertoire, but also need to be legitimate and 'viable' in the eyes of elites (e.g. political leadership, organizational leadership, thought leaders) who represent the existing structure and its bias towards continuation of the status quo. If agents find this balance, Delacour & Decla (2017), elites can accept change of their guiding structural repertoire; strategic work can prompt them to 'exceed' the structure for a moment. Bourdieu calls this 'moment' *consecration* (Delacour & Decla, 2017, p. 599); 'an act of social magic that produces discontinuity out of continuity'. Consecration is a brief time and space when agents can reflect on their structural context and change it; in that sense, it is a structural context that allows for, or even calls for, agents to reflect on the structural context and make changes to them in terms

of norms, rules, or assumptions. In the case of robust policy design this can be the moment where elites realize that in order to maintain future performance they now have to adapt 'their' policy, even though that requires them to move away from the current path for policy, and perhaps to set aside deeply felt shared beliefs and normative preferences; even though the mainstream of information does not point in that direction. Consecration is a moment where elites (or other agents) are primed into reflection on the structural conditions they work from, and are open to adapting them if necessary.

For the study of EWSs and robust policy design all this is interesting at two related levels. Firstly, structuration, habituation and consecration apply to the actions of agents within the practice of the system of early warning, who turn ambiguous signals into 'early warnings' for the organizational elite. Here we can look at the dynamics between structure and agency, continuity and discontinuity, distinction and legitimacy, *within* 'the EWS'-as-practice. Secondly, similar dynamics apply to how the system fits the structural repertoire of the organization, and what is *done with* the 'early warning' the system produces; this involves the position and status of the system within the organization, and if and how the 'signals' do indeed *affect* the elite of the organization. In Bordieuan terms; is there consecration of the EWS and of the perspective towards uncertainty of the future that is stands for?

We will now turn to our empirical case to see how the practice of early warning played out at both levels; how did the practice of the EWS evolve over time, and how, when, and why did consecration of early warning (and adaptation of policy) take place?

Research design

As a case study we analyzed the design and development of the EWS of the Dutch 'Rijkswaterstaat' (RWS). RWS is the executive agency of the Dutch Ministry of Infrastructure and the Environment (Ministry of I&M). The agency is responsible for all road building, water management, and the construction and development of critical infrastructures of the Netherlands. RWS developed and started working with the EWS in 2010 and asked us as researchers in the summer of 2012 to evaluate the system. The RWS board asked us to not only focus on the content of the signals and the process of the system, but to also look at the positioning of the EW system in the organization. Moreover, the evaluation had to look at the capacity of RWS to anticipate events, but also the 'openness' for unexpectedness.

To answer these questions, we decided to look at the workings of the system and study the EWS as a strategic practice. We were particularly interested in the level of attention and action from the Board of RWS; how were they affected by the 'system' and what was it that affected them. Note that we do not so much measure the 'amount of affectedness', but are interested in *what* affects them, how 'affect' works, and also what dilemmas around affect are.

In the RWS-EWS weak signals are collected to provide insight into the developments in the three infrastructural networks RWS maintains (main motorway network, main waterway network and main water system). In the systems, the insights are collected and interpreted, and are then presented to the Board of the organization that has to decide what to do with the signals. The study of this system allowed us to see how the

system for early warning worked in practice, and how the EWS did or did not affect the Board of RWS in its attitude towards future uncertainty. This allowed us to learn more about what is necessary to add to robust policy design in the face of uncertainty about the future.

Data-collection and analysis

The empirical case study consisted of a document study and extensive semi-structured qualitative interviews.

Firstly, we studied the signals that were collected in the system and looked which signals received follow-up by management. The EW-team provided us with all of the documents they had used to produce and interpret the signals. Moreover, we were given all of the documents used and produced by the Board that referred to the EW-system, including the thorough minutes of Board meetings.

We used the documents to reconstruct the path of the signals that were collected, filtered and presented to the board in four successive 6-month-cycles of the system. Since the EWS is performed twice a year, we were able to study four EW-cycles during our two-year research period. We analyzed the documents to understand which type of signals were initially gathered, how this was done, how signals were then interpreted and selected – and by who, and how signals were presented to the Board. We also used the documents to see how the signals presented to the Board were discussed by the Board and if and how the strategic response to the signals was organized; we did not only look at the content of the discussion in the Board, but also looked at the organized response and the strategic actions taken in and after the Board meeting.

Our document analysis produced insight in the stream of information that the EWS produced during the four cycles we studied. Moreover, we were able to reconstruct the processes of collecting the signals, the interpretation of signals, the selection of signals that were presented to the Board, the presentation to the Board, the strategic response by the Board, and the follow-up of the Board's response in terms of organizational action, monitoring, and the reporting back to the Board.

Secondly, we conducted semi-structured interviews with over 30 stakeholders from inside and outside the RWS organization about the functioning and impacts of the system. Among the interviewees were members of the EW Team, members of the Board, managers of different departments within RWS, members of the selection committees and (internal and external) correspondents. The interviews were semi-structured; we used a topic list that touched on the issues of selection, interpretation and linking of early warnings, as well as on the broader issue of the position of the RWS-EWS system within the decision-making process RWS. The latter was important for assessing the effects of the RWS-EWS system on the capacities of anticipation and agility. Two researchers conducted the interviews, so that we were able to take notes while one of the interviewers could ask more detailed questions as the interview developed. This was important, because we wanted to learn how interviewees felt about the system.

Thirdly, based on the interviews, we were able to reconstruct the development of the EW system and the impact it had on the decision-making in the organization. This

allowed us to not only describe the design and development process of the RWS-EWS, but also to draw conclusions about the working of the system and the position of it in the deliberations of the Board of RWS.

Findings

The origins and basics of the RWS-EWS system

The EW system originated from a need for more strategic and future-oriented knowledge of the Board of RWS. The deputy director-general of RWS requested the development of an EWS in 2008, as part of the new Strategic Explorations programme of the Water Division. The RWS deputy director-general used the following illustration to explain the need for the system: *'When in 10 years the current legislation does not allow us to extract sand in the North Sea any more, the RWS Board wants to hear it from the Water Division now. And we want an answer to the question: What is the alternative? The Early Warning System is all about the long-term developments that we have to foresee now'.*

In order to set up the EWS an 'Early Warning team' was installed. The team initially consisted of two highly experienced employees of RWS. The team started by setting up a network of 'correspondents'. The network comprised of senior staff members of the RWS Water Division and of external experts on particular topics in the area of water management. Correspondents were simply asked to provide signals they felt needed more attention. These were compiled into a list and the list was discussed with the Board. The signals that were deemed important enough were followed up by a so-called 'Strategic Exploration' and received a 'Board Recommendation'. A Strategic Exploration is an internal research project that gathers more information about a signal and typically results in a report about the signal itself, underlying trends and developments, and possible consequences for RWS. The Board Recommendation is a stronger organizational instrument; it is a strategic advice to the Board that a particular signal is important and mentions the key characteristics of the signal and the anticipated areas of the impact on the RWS-field. For some signals the Board Recommendation includes an advice about possible responses, for others the recommendation is mainly to discuss the signal in the Board.

In March 2009, the new director-general of RWS took the initiative to expand the EWS to the entire organization. He explicitly referred to it as an 'Organizational Conscience', with the following explanatory note: *'If we see things in the three networks that deviate from whatever common knowledge and political preferences indicate, we owe it to ourselves to be aware of that'.*As from June 2010 the EWS was officially asked to cover the entire field of RWS and the entire organization. This scaled-up EW-system was the starting point in our research on the RWS-EWS.

The renewed EWS was designed as what the Early Warning team called a 'funnel method'; signals were 'funnelled' up towards recommendations for the Board of RWS. First, the Early Warning team retrieved signals from its of internal and external 'correspondents'. About a quarter of these correspondents were recurrent. The signals were often retrieved through an interview (the interviewer being a member of the EWS-team), but sometimes also by email. In the next phase, signals were explained in more

detail and included in a long list of up to 80 signals. An internal selection committee installed by the EWS-team then reduced the long list to a short list of no more than 10 signals. The short list was then sent to the Board that discusses the signals and decides which signals (usually two or three) need further elaboration in the form of a strategic exploration and a subsequent strategic recommendation. Moreover, the Board also decides if and how signals possibly require specific follow-up actions; for instance, a signal may not be picked as important enough for further strategic elaboration, but still can be followed-up by a specific project. Sometimes a signal is picked up 'simply' as a problem that should be fixed immediately, rather than to be further monitored or investigated as a possible uncertainty. Other signals are merely taken into account as 'good to know' but are not followed up at all. After the board meeting, the EW team informs all the correspondents as to how their signal were received and whether or not any follow-up action was planned. This cycle is repeated every six months.

Three phases of development for the RWS-EWS

If we look at the workings of the EWS-system we can distinguish three phases of development.

Phase 1: the start of the RWS-EWS

At the start of the RWS-EWS in 2010, the EWS-team was highly personally involved in the process of collecting, interpreting and matching the signals to strategy. The team collected the signals from different correspondents, selected the most important signals in consultation with a select group of colleagues and then informed the Board about them, who would then determine what actions should be taken. One of our respondents described this process as ad hoc *and light*, in the sense that it was a fast and efficient process in which most of the decisions were made by a few engaged people.

Many respondents note that during that period a few clear successes were booked with signals that 'opened the eyes of board members' and had large impact in the organization. This was also the intention of the EW-team, as one of the respondents from the team said: '*We tried to find surprising signals in particular*'. Moreover, the Board itself was also very open to being surprised; in a sense, they were longing for surprise and wanted the EWS to really stretch the thinking of the organization.

One successful example that was mentioned frequently by our respondents was a signal about road-building projects. 'This signal showed that in each road-building project, the minimal security criteria and quality standards are applied, which increased the vulnerability of the road network as a whole'. This signal was not only a critical reflection on the standard practices at RWS in a number of projects, but also offered a new perspective by not looking at the level of individual projects, but at the effects on the entire network. This revealed to the Board and project-managers that decades of strong focus on tight project-management, and an emphasis on efficiency within projects, had turned RWS from a 'steward of infrastructure networks' into a 'highly efficient project-factory'. The signal helped the organization to reflect on an unintended consequence of this project-bias and to return to a more holistic view on networks and reposition the role of RWS.

From project-based replacements to a 'general replacement strategy' for key-installations.
RWS manages hundreds of installations (channels, dams, bridges, pumping stations). As a rule, these are replaced when they have reached the end of their technical lifespan, one-to-one, at the same location that was chosen some hundred years ago. In the EW system, one of the internal correspondents noted that many installations were built in the 1920s and 1930s, and that RWS faced an extensive replacement task as from 2020. Moreover, another respondent signalled that the funding required for the replacements had not really been reserved within the individual budgets of the installations. In the discussion that followed from these signals the Board concluded that a programmatic approach of the replacement-effort as a whole was required. This program should look at the current state of the installations, the required functionality in the long-term (also in relation to climate change adaptation), and the political-administrative situation in the region.

Phosphate: from waste product to a valuable resource.
Phosphate is a waste product that leads to eutrophication problems for RWS and other water managers. It is, however, also an indispensable food substance. In an Early Warning it was flagged that the global phosphate supply is running out, while the finite supply is in the hands of politically unstable or hostile countries. Instead of a waste product phosphate in 'waste-water' could become of great value in the future. Further exploration showed that several private companies were already developing methods for reclaiming phosphate from waste water. Thanks to the signal, RWS had the opportunity to shift its position towards an active facilitating role for the parties that were developing new technology for reclaiming phosphate. RWS also provided access to several of its installations as innovation areas where companies and research centres could gain practical experience. Now, years later, the market for 'recycled phosphates' out of the water system is growing very fast, and RWS plays an important role in the coordination of the system.

In the boxes below two we describe examples of two other signals that were mentioned by the respondents as examples of 'effective signals'.
During this first phase, the EW system quickly developed into a recognized and valued instrument to facilitate strategic discussions at the Board level; for example, it helped employees to 'give a direct signal to the Board, without having to go through the normal bureaucratic procedures'. This provided the EWS some status, as others recognized it is 'a short cut' to the agenda of the Board. Moreover, Board-members themselves greatly valued the discussions they had in response to signals; one Board-member stated that 'having the discussion about these signals, whether they are wrong or right predictions, was maybe even the most valuable part of the EWS'. Board-members felt that the EWS gave them some much-needed space in their meetings to have a 'real' discussion about strategic uncertainties and about internal preoccupations in the organization, and within the Board.

In the meantime, the EW team itself was also looking to further improve the system. Team-members explained that they wanted to address two main concerns. The first concern was about the *quality* of the collected signals in terms of 'content'. Uncertainty about contens is inherent in the working method of RWS-EWS, because the system works from the principle that *every* signal that is brought up by correspondents is taken into the system, to avert bias and lock-in. However, variety can come at the expense of quality of content, and can at some point also damage the reputation of the system; at least, that was the worry of the team. And they were probable right; several respondents brought the same example of this dynamic forward: 'A group of RWS-trainees gave the signal that more should be done with social media. This signal even made it to the Board. However, the social media efforts of RWS were already acknowledged as being very good, and the social media policy of RWS had even won prizes; so eventually the signal did not get any follow-up'. Respondents and also team-members thought that signals like this would do

damage to the reputation of the system; anyone's guess or gut-feeling was apparently good enough to go into the system?

The quality of the input remained somewhat of a struggle: is the signal any good? Is it complete? Is it sufficiently 'different'? Is it honest? And what exactly makes a 'good signal'? This also became a struggle for the internal selection committee that looked at all of the signals; as one of the respondents from this group stated: 'We were faced with a variety of signals, but there were no "hard criteria" to select them. How could we be sure we choose the right signals?' The Early warning team recognized the problem and to 'tackle' it the team started to make its own pre-selection into an 'A' and a 'B' list; signals in the B list did not meet a number of set quality criteria and although the selection committee was free to do so they were advised not to spent too much time on these signals. However, the members of the selection committee were free to prioritize any signals in the B list. In spite of the changes, the question remained if the signals that 'made it' through the selection to the Board were also the 'best' signals.

Closely connected to this, the Early Warning team also had a second concern. The team was wondering if there was enough *variation* in the signals selected for the Board. The initial wide variety of signals is quickly reduced into a small selection that is seen by the Board. This caused a feeling of waste, as ideas disappear and correspondents see little merit of their work. Correspondents understand the reasons for selection, but they indicated that it would be nice if the other signals could be put to use as well. One of them stated 'the fact that not everything makes it into the *Network Letter* for the Board is necessary and good, but it is a loss if the other signals are not communicated to the lower levels of the organization'.

Phase 2: professionalizing the EW system

Against the background of these questions, the Early Warning team further developed the system. The EW process was *professionalized* along the line of content; the system became more elaborate and according to the early warning team more precise. Furthermore, it became more streamlined, by establishing a large network of regular 'correspondents' from inside and outside RWS. Especially the number of external correspondents was increased to make sure a large variety of insights was collected. To improve the quality of the signals, the selection of signals was done more thorough. The selection committee was reorganized to consist of *experts* from the various branches of RWS; the experts reviewed the quality and variety of the signals, as well as the solidity of the actions that might be proposed. Also, the EW-team invested in streamlining the process of early warning. It was no longer an ad hoc project, but a standard process in the organization which would take place every six months following a clearly planned schedule. The process after the Board meeting, the translation of the signals into strategic explorations and organizational action, also received increasing attention from the EW team. From late 2011, the EW team also send the signals that did not make it to the Board to the relevant departments of the organization.

At the same time, the system did not seem to be producing the same impact as in the first period. Respondents did not recall 'game-changing' signals from this period for the work-practice in the organization. One of our respondents stated: 'The signals that made it to the Board did not seem to establish "shifts in perspective", as was the case with signals in the beginning'. Respondents could not recall any early warnings that

made a significant change to the strategy of the organization. It seemed as if the more the system was developed and embedded in the organization, the less exciting and sensitive the signals became. In respondents put it as follows; 'There were always more urgent items on the agenda requiring the attention of the Board. The Network Letter with early warning became more of a habit for Board members, one that could quickly be handled. It was expected and therefore less surprising than in the beginning'.

Another respondent told us: 'The signals from the EWS became one of the "*decision points*" on a regular Board meeting. It was all so well prepared, that all they had to do was give their approval. This caused that there was no real discussion about the signals anymore'. For the Board, the system had become less confrontational; it almost became an automated response that evoked instant approval but provoked little strategic debate. The discomfort caused by signals had faded and even though the Board acted in response to signals by signing of on plans and projects, the feeling of 'uncertainty' was not present in the Board anymore. The EWS had become less 'explosive'. There was strategic response, but not the also important 'strategic discomfort' of knowing about important developments that cannot yet be fully understood but need to be considered.

Meanwhile, the EWS-team attempted to bring the element of surprise back into the system. The team focused on acquiring more signals from the outside-in, in an attempt to get a better idea of the blind spots of RWS. The involvement of more external experts, such as market parties that collaborate with RWS, partner organizations, trainers and scientists made it possible to collect fresh perspectives. However, more outside views was not to the same as unexpected signals. One respondent said that the team played a problematic part: 'They filtered out only the most important signals. But those were exactly the things that the Board would know anyway'. An external respondent said: 'We noticed that the signals could not by too controversial. Those would be filtered out, because the EW-team thought it would not be productive to start a discussion about such a topic'. Another respondent said: 'It was often easier to deny signals from external parties than the signals from close to home that directly touched upon the (organization of the) operations'. 'Good to know' was the usual responses. The pressure for the Board to look in the mirror diminished. Signals provided a different perspective, but did not necessarily cause any discomfort with the Board anymore.

Phase 3: back towards a nagging system

During the last of the cycle of the EWS that we studied the EW-team tried to maintain the professional character of the system, but also wanted to make the signals urgent and *nagging* again. The team wanted to bring discomfort back into the system. They wanted to make the system less predictable, by reducing the structured parts of the process and leave more space for quick actions. One of the changes they made was to be less fixed to the six-months-cycle and collect signals throughout the year. Signals were presented to the Board immediately after they came up. This way signals were less 'expected' by the Board and the element of surprise returned. Another improvement was to sometimes direct certain signals directly to the relevant department instead of the route through the Board level. The EW-team also looked for more diverse criteria for guiding signals to the Board. For example, by selecting signals not only on their prospective value, but also on the extent in which it offers a new perspective on the organizations activities. It

seems that although the EW system had been slumbering, the EW team was now successfully reviving it. Our interviews with the Board Members seem to confirm this; the system was back to a more 'nagging state, which Board members consider a compliment for the team and for the system.

Analysis

In the beginning of the RWS-EWS, the instrument worked as a confronting and disturbing process that brought uncertainty about the unknown dynamics of the future into the heart of the strategic debate in the Board. Signals drew attention and interest of the Board and impacted strategic deliberation and decision making. Signals were taken seriously and led to follow-up by the Board. The EWS added to the capacity of RWS to design robust policy; the RWS-EWS initiated various 'acts of anticipation' by the Board, to steer the organization away from developments signaled by the EWS, and design 'more robustness' into the policies RWS makes and maintains.

The next phase of the system saw a further professionalization of the RWS-EWS. Because the system was taken so seriously, more time and resources were made available for it. But expectations were now 'higher' than before and the team felt it had to improve its methods in order to maintain its effect; it wanted to become less 'ad hoc' and more 'professional' in its approach. Moreover, because signals were used as inputs for decision making, the feeling rose that the process should be based more on 'real' knowledge and expertise. The team designed standardized procedures for collecting signals, and invited trained experts to select them. These seemed logical improvements to the RWS-EWS that turned the system, according to the team, into a 'real' decision-support tools. By doing so, the RWS-EWS team wanted to maintain its position in the strategic deliberation at the top; legitimate enough to be taken seriously, but also distinct enough to really 'stretch' the strategic debate in the Board.

However, in the process of further professionalizing the signals became less confronting for the Board. Users suggest that in this process the RWS-EWS reports about early warnings became predictable; more factual, less surprising. The team sought legitimacy by means of more rigorous reports, recognized as 'quality work' in the traditional engineering-style of RWS, but in the process lost its distinctiveness. The signals themselves were carefully selected and were better documented than before, but the richness of the reports did not evoke the same arousal as they used to do. Board members became less personally involved and were less worried about signs of possible disturbance. As a result, the need for changes in the repertoire was hardly felt and robustness of the repertoire of RWS was not enhanced. This was due to the new procedures around early warnings. The EWS was now a formal part of the decision-structure of the Board and that meant that it was put on the agenda as a regular decision-item, from where the decision was then 'loaded' into the management control system to oversee the progress of the issue. Warnings became 'projects' that were assigned to project-teams and monitored in the normal management control system. That improved the feeling of control over the follow-up, but took the edges of the discussion about signs; and it took away the feeling of imminent disturbance and inevitable surprise. Instead of discussion signals now provoked decisions; and these

were quickly translated into projects with deliverables. The management control system became the primary input for further discussion about early warnings in the Board; 'how are we doing with project X?', rather than 'are we worried enough about development X, Y and Z?'

The waning 'warning' effect of the RWS-EWS was noted by the Board and by the team. After two cycles the team was quick to reverse many of the changes. The EWS-team took steps to bring back the 'surprise' in the system and initiate strategic debate in the Board. To do so, it returned more to the 'ad hoc' state of the system, with less 'systematic' structuring of the collection, interpretation and presentation of signals to the Board. Interestingly enough, the Board became more interested in the signals again; the debate inside the Board intensified, and once more early warning instigated heated discussions and also moment of deep reflection on assumptions within the RWS policy, the organization, and the Board itself.

Discussion

In its first phase, the RWS-EWS was effective in achieving consecration; even though the system was not very 'systematic', signals were taken seriously by The Board. Early warning instigated strategic reflection on structural biases of the organization; consecration took place. After that, in order to maintain consecration, the early warning team wanted to professionalize the system; it felt that in order to do so it had to raise the bar of the system. The team invested in procedures, in more factual accounts of warnings, and recruited external expertise to improve the accuracy of signals. However, in that process the system lost its ability to create consecration. The Board hardly used the information anymore to reflect on the current repertoire and added warning to the existing flow of management-information; signals evoked management action, but not the critical reflection it intended. Structural reflection on assumptions and a critical assessment of uncertainty surrounding the policies of RWS hardly took place anymore. This came back only when the team focused more on 'surprise' in the signals, in the content of signals and also in the form and timing of the reporting; after that, the system regained some of its earlier influence on the strategic debate in the Board. Early warning can add to the capacity for robust policy design, if signals and warnings prompt consecration, and lead to adaptation of anticipation by strategic elites. In order to achieve this distinction and legitimacy are both equally important.

Moreover, there is another interesting finding in our case. Based on theoretical concepts, such as path-dependency and habituation we expected more institutional, or structural, 'resistance' to the practice of early warning. An EWS is designed to produce counter-narratives that challenge current repertoire in the organization; in order to 'work' it needs to be confrontational and look in discontinuous directions. From a structural-agency perspective this should invoke pressure from structural mechanisms, to constrain or block the ability of agents to be confrontational. We had expected that especially in the second phase of the EWS these more path-dependent forces would push the EWS system further back and perhaps terminate it. But we did not find this. On the contrary, the Board was supportive of the steps towards re-energizing the EWS and invited 'surprise'. We see two possible and probably related explanations for this. The first explanation lies in the nature of habituation; habitus

refers to a *local* scheme of rules, routines and repertoire. And for that matter, RWS is not an ordinary organization; it has a long tradition of foresight-studies and scenario-planning and it is something that Board members and others in the organization are proud of. In that sense the EWS came natural to the specific habitus of RWS; the EWS system served the purpose of maintaining the tradition of foresight and 'being prepared for uncertain futures'; for that matter, some level of anticipation was already a part of the habituated scheme of RWS. Other organizations might have terminated the EWS, but in RWS there was a different habituated response; a call for improvement rather than a termination of the program. An interesting line of future research would be to further investigate capacity for robustness in relation to habitus, as a capacity that is specific, local and historically contingent for the organization or the system in which policy is made, or to which it applies.

A second explanation for the continuation of the EWS program under structural pressure, is that *strategic* practice is perhaps a specific habitus in itself. In a strategic practice, apparently, different organizational rules and codes may apply. Strategic processes are expected to be 'different', and agents are allowed more space to venture out of bounds of the traditional repertoire; elites expect to be surprised. The dynamic in the Board provides a very interesting example of strategic practice as a habitus in itself. They Board needed early warnings to 'initiate' strategic deliberation; it was almost as if early warning opened a temporary gap in the regular dealings of the Board to go beyond the routines of the meeting and reflect on the current repertoire and. Technically, they do not need an early warning to do that; but apparently, they need a cue to switch into a reflective mode. When the system produced mainstreamed signals, the Board missed their cue for reflection and did not engage in it. When the system moved back to 'surprising signals', the Board became more reflective again. Board members were aware of this dynamic, they literally asked for it. In order for early warning as part of robust policy design to work, it is imminent that agents are aware of the specific habitus. Future research could further investigate this possible explanation, for instance through a comparative study of strategic practices in a variety of organizations or policy-systems.

Robust policy design requires strategic discomfort

If we take these findings back to the guiding question for this paper, 'what are characteristics and dilemmas of the practice of EWSs that help to achieve robust policy design', several conclusions become apparent.

Firstly, the urgency for robustness is only 'real' when there is real discomfort about the uncertainty and dynamics that policy is confronted with. Factual accuracy is important, but 'urgency' is produced by other factors than accuracy alone. In its early years, early warnings felt like a splinter in the foot of the Board members; they felt uncomfortable, but it was a level of discomfort that produced opportunity to act and to adapt policies to better address new or previously undetected dynamics. In this phase, early warning added to the capacity for robust policy design. While the RWS-EWS in its later stage still produced splinters, it presented them on a silver plate instead of in the foot of the board members; the warnings looked better, but hurt less. Board members saw the splinter, but did not *feel* it anymore; and as a consequence, they did not act.

They decided on follow-up projects, but did not engage in reflection anymore. Only after the system became more nagging and discomforting, and painful, did it affect the Board again. Apparently, robust policy design requires moments of discomfort; that is also why it is not a self-evident capacity and why organization or 'policy designers' have to take deliberate action to achieve and maintain it. Whereas many structural repertoire is designed to promote 'comfort', in the sense of continuation of established patterns, robustness requires reflection; to open up these moments of consecration, discomfort is necessary.

Secondly, we have seen that phenomena, such as path-dependency and positive feedback from institutional structure should be looked at on a much more specific and historically-contingent level; as the concept of habitus suggests, there can be a structural call for periodic discomfort and an almost build-in need for moments where discontinuity can break through. That may be a very specific feature of the RWS organization, but it can also be a more common feature of strategic practice. This means that build-in strategic space, a strategic habitus, should be a recurring feature of a robust policy process.

Thirdly, all this implies that early warning as part of robust policy design is a highly specific capacity. We can talk about capacity as an object that needs to have its place in a design, but it is more a practice that needs to be *done* in a process of design; it is a range of activities of agents, habituated in a structural institutional context. Our findings suggest that this practice is highly specific and 'local'; not merely because policies and external developments will differ, but more importantly because the habitus in which the practice of early warning and robust design take place are local and specific. The characteristics of effective early warning will be different for various organizations and policies. This holds an important lesson for policy makers who want to design 'robust policy'; robustness does not result from having a *system* for early warning, but from continuously asking the question 'are we warning ourselves early enough?' For policy makers early warning is not an answer, it is a question.

Disclosure statement

No potential conflict of interest was reported by the authors.

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