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European Civil Security Governance

Diversity and Cooperation in Crisis and Disaster Management

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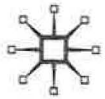

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Exploring the EU's Role as Transboundary Crisis Manager: The Facilitation of Sense-Making during the Ash Crisis

Sanneke Kuipers and Arjen Boin

Introduction

In recent years, nation-states have encountered a rapidly changing environment marked by the onset of various threats. These threats range from terrorism to epidemics, from shifting international relations to the breakdown of the financial system, from climate change to cyber attacks. We live in a world where 'black swans' and 'mega crises' can strike any time (Taleb, 2007; Helsloot et al., 2012). These new threats and impending crises bring to the fore a specific set of political and administrative challenges that are hard to address (OECD, 2003, 2011; Boin et al., 2005; Boin, 2009).

Within the closely knit European Union (EU), a 'mega-crisis' typically affects multiple Member States. Many critical systems in Europe – those that sustain basic societal functions, such as energy grids, logistic networks, food distribution chains and financial flow structures – reach across national borders. An incident in one corner of the EU can easily cause a crisis in a region across the continent. We speak of transboundary crises, as they unfold across geographical and system borders (Boin and Rhinard, 2008).

The EU has faced several transboundary crises in the past (think of Chernobyl, the Mad Cow disease and the financial meltdown), which demonstrated the need for a joint response. The very idea of a transboundary response fits the core principles of subsidiarity (i.e. the EU should primarily initiate policies and capacity that member

states could or would not develop on their own). In recent years, recognition of the need for transboundary crisis management capacities has grown steadily across EU institutions (Boin et al., 2013a; Bossong and Hegemann, introduction to this volume).

Transboundary crisis management requires international coordination, mutual assistance, information-sharing and joint decision-making (Ansell et al., 2010). But the civil security systems of the member states differ markedly in their organization of operational response, the (de)centralization of authority, the distribution of resources, the role of private actors and the military.[1] It is not easy to align all these different resources to facilitate a joint, transboundary response. The EU has begun to build capacities to facilitate a joint response to a disaster-struck area (Boin et al., 2013a).[2] But the EU still has limited capacities to facilitate a *joint* response to a *transboundary* threat that confronts *multiple member states*. There is 'no centralized department for transboundary crisis management; it is a field without a name (...) it is not even clear who in the EU is aware of all these available capacities' (Boin et al., 2013a, p. 130). This paper explores the EU's potential role in facilitating such a transboundary response. We are particularly interested to see how the EU can facilitate joint sense-making, one of the core functions of strategic crisis management (Boin et al., 2013b). We have two reasons for this particular focus.

First, a joint response to a transboundary crisis is undermined by the lack of a shared picture about the unfolding threat. The information required to fully understand what is going on during a transboundary crisis is usually spread widely across organizations, policy sectors and countries. Without such a shared picture, critical decisions will be uninformed and coordination is likely to be suboptimal at best (Boin and Bynander, 2015). Importantly, it will be hard to communicate an accurate message 'with one mouth' – a condition for effective crisis management in the media era. This is the challenge of transboundary sense-making (Weick, 1995; Ansell et al., 2010). Second, the EU does not have formal authority to *manage* a crisis response; it heavily relies on what member states will bring to the table (both in terms of granting authority and offering resources). The EU can therefore merely *facilitate* one. It is exactly in this area of transboundary sense-making that the EU can play a powerful and essential facilitating role (Boin et al., 2014).

We seek to illustrate this point by analysing a recent transboundary crisis: the volcanic ash crisis of 2010. We start by elaborating the concept of transboundary crisis. We then revisit the volcanic ash crisis and explore the EU's role in that crisis. We end by contemplating if and how the EU could enhance its role in providing capacities for joint sense-making.

Transboundary crises and the sense-making challenge

We speak of a 'transboundary crisis' when the functioning of multiple, life-sustaining systems or critical infrastructures faces an urgent threat that must be addressed under conditions of deep uncertainty (Ansell et al., 2010; cf. Rosenthal et al., 1989, 2001). Transboundary crises typically:

- affect multiple jurisdictions and challenge authorities at multiple levels of government (cities, regions, countries)
- require public–private cooperation
- undermine the functioning of multiple policy sectors and critical infrastructures
- escalate in unforeseen directions, exploiting linkages between functional and geographical domains.

The impact of a transboundary crisis can be felt far away from its epicentre: transboundary crises have no, or at least not one, Ground Zero. They have, of course, always existed (the Plague, invading marauders, and financial breakdowns are of all times). Modern vectors such as globalization, optimization of supply chains, increased mobility, tight coupling and complex interaction of technically advanced systems have increased systemic efficiencies that exacerbate the speed and scope of contagion (Turner, 1978; Perrow, 1984). This means that known hazards (floods, hurricanes, earthquakes) may have new and unanticipated effects (Boin, 2009).

It has always been hard to manage a crisis or disaster (Rosenthal et al., 1989, 2001; Boin et al., 2005; Rodriguez et al., 2006). At the strategic level of government, we can discern a set of critical tasks that senior policymakers and politicians are expected to fulfil during a crisis (Boin et al., 2005, 2013). They have to coordinate complex networks and make critical decisions; they must communicate with stakeholders; and they must account for their actions, preserving governmental legitimacy. But an effective fulfilment of these tasks requires one other and critical task: sense-making.

The *sense-making* challenge pertains to the recognition from vague, ambivalent and contradictory signals that a crisis is unfolding and how it is evolving. We define sense-making here in terms of collecting,

analysing and sharing information on the causes, dynamics and effects of the crisis and its potential solution (cf. Weick, 1995). It is an essential task: if done well, it provides decision-makers with a *shared perception of what is happening*. All too often, it appears that decision-makers have different mental pictures of the crisis situation, which can and do lead to confusion, misunderstandings, irritation and, ultimately, misguided decisions.

We must make a distinction here between *detection* and *understanding* a crisis. *Detection* pertains to the recognition that a crisis has begun. Sometimes that is self-evident: an earthquake or tsunami is usually immediately and widely noticed. But, as a general rule, we know that the starting point of a crisis is much easier to pinpoint *after* a crisis, with hindsight knowledge, than *during* a crisis.

Understanding a crisis pertains to the causes, dynamics and consequences of an unfolding crisis. Again, what happens during a crisis may appear painfully obvious in hindsight. It is, however, rarely anywhere near evident in the midst of crisis. Policymakers typically find themselves confronted with an overload of seemingly useless information and a dearth of needed information. What may be clear at the operational level may be understood very differently at the strategic level.

To detect and understand unfolding crises, three interrelated processes are necessary:

1. Collecting information: defining what information is needed and gathering or requesting it
2. Analysing information: piecing together information from various sources, validating it and creating a 'complete' picture of a situation
3. Sharing information: communicating the emerging picture of the situation with internal and external partners, while specifying what is known for sure and what is merely suspected.

Sense-making may be one of the hardest challenges that crisis managers face. In the literature, we find at least three types of explanation for the limited sense-making capacity that we so often witness during a crisis. First, psychologists have shown that most people find it very hard to correctly process information when they experience high levels of stress (Reason, 2008; Kahneman, 2011). Second, the difficulties of information processing under stress can easily be amplified by certain group processes, which typically emerge when a group must act under time pressure (Vertzberger, 1990; 't Hart et al., 1997). Third, the processing of information can be hindered or even undermined by existing tensions

that play up between organizational units (Turner, 1978; Rosenthal et al., 1991; Preston and 't Hart, 1999).

One only has to read the official reports on the response to Hurricane Katrina and the subsequent flooding of New Orleans (in the summer of 2005) to find telling illustrations of the findings summarized above (Brinkley, 2006; Cooper and Block, 2006). The most essential information about breaking levees and the location of survivors took what in hindsight appears an incredibly long time to reach the strategic level (and not all critical information reached that level). Academic research strongly suggests that this is a normal occurrence, especially if the organization of sense-making is not properly prepared.

The characteristics of transboundary crises compound the challenges of sense-making (Ansell et al., 2010). More actors become involved who have to communicate across vertical and horizontal boundaries. A wide variety of organizations will have to share information and somehow arrive at a shared picture of the situation. This multiplies the organizational and political interests; it also increases transaction costs. Emerging appraisals are easily thwarted by unexpected interacting developments and hidden interdependencies, which requires intense and continuous cooperation between organizations that never have worked with each other before. They must somehow understand the technical language of other sectors and appreciate cultural differences. When crises stretch across national boundaries, the challenge becomes even harder.

The sense-making challenge became particularly evident during the volcanic ash crisis of 2010. The case is a text-book example of a transboundary crisis. It caused an unprecedented mobility crisis due to an air space closure and aviation standstill of a full week. It has been well studied, but not from a transboundary perspective with a specific focus on the EU's role (Tindall, 2010; Alemanno, 2011; Brannigan, 2011; Budd et al., 2011; Macrae, 2011; O'Regan, 2011; Lee and Preston, 2012; Alexander, 2013; Christensen et al., 2013; Hutter and Lloyd-Bostock, 2013; Nohrstedt, 2013; Parker, 2014). Whereas most other studies of the Eyjafjallajökull crisis focus on preventing the next volcanic ash crisis, we are particularly interested in the role that the EU played in facilitating a transboundary response.

The Icelandic ash case

On 14 April 2010, the volcano Eyjafjallajökull on Iceland erupted, sending an ash cloud several miles high into the atmosphere. The eruption, though relatively small-scale, unexpectedly turned into a crisis

for air traffic dependent industries, travellers and governments across the world as the ash cloud hovered over Europe for days on end. The Volcanic Ash Advisory Center (VAAC) in London registered high concentrations of airborne ash in the early morning of 14 April. A warning was forwarded to the European Organization for the Safety of Air Navigation (hereafter called Eurocontrol), which posted a message on the Open Network Portal, indicating possible implications for European air traffic.[3] Later in the afternoon, Eurocontrol organized a videoconference with participating National Air Traffic Services (NATS) discussing possible closing of air space.

The Norwegian Air Traffic Control centre was the first authority to impose flight restrictions in the late evening of 14 April. Sweden, Finland and the UK followed shortly thereafter as the ash cloud spread southeast during the night. The ash cloud continued spreading during the following day, causing Ireland, Denmark, the Netherlands and Belgium to impose flight restrictions. Initially, restrictions were announced on an hourly basis by local airport management. When national weather forecast services announced that westbound winds would continue for days, the first definite closure was announced at London Heathrow Airport in the morning of 15 April. Meanwhile, Eurocontrol recommended closure of national air space in Northwestern Europe. Eurocontrol recommendations are not obligatory, but countries complied. National Air Traffic Control agencies in Belgium, the Netherlands and France took subsequent action on the same day. Germany, Switzerland, Poland and the Czech Republic followed on 16 April.

In closing their airspace, authorities were acting on guidelines established by the International Civil Aviation Organization (ICAO, a UN organization). These guidelines prescribed a no-fly zone when volcanic ash is detectable in air space (a no-tolerance threshold at 200 μg). Though volcanic ash was a known hazard in the aviation sector, surprisingly little was known about the impact of ash particles on aircraft engines. The only data readily available was old – instances of high, localized concentrations of volcanic ash affecting the technology of 20 years ago. The ICAO guidelines were based on this old data.[4] Other guidelines or standards for safety being absent, the only guarantee for flight safety was to completely avoid ash clouds (Alemanno, 2011, p. 6).

The situation thus combined (1) an absence of reliable and accurate data detailing the composition, dispersion and changing location of the ash cloud with (2) a lack of consensus among manufacturers, airlines, regulators and engineers of what constituted a safe threshold for

aviation. The default reaction amounted to a 'safety first' approach: first do not cause any harm. The across-the-board embrace of the safety first approach had immediate and unforeseen consequences.

Consequences

European aviation came to a grinding halt. Europe is one of the busiest air spaces in the world, with 150,000 air routes, 150 airlines and 9.5 million annual flights (O'Regan, 2011). On 16 April, air traffic volume in Europe had dropped by over 80 per cent (Eurocontrol, 2010). European air traffic reached its lowest point on 18 April at only 15 per cent of the scheduled air traffic.

The effects of the crisis rippled through the system, with a cancellation of 108,000 flights, a stranding of 10.5 million passengers and lost revenue of 1.7 billion US dollars in the airline industry alone (Eurocontrol, 2010). The member states with a significant tourism sector suffered. Industries dependent on air cargo (medicine, manufacturing, perishable goods) and 'just in time' delivery schemes experienced disruptions and delays. A survey by Chatham House among business executives revealed that 'had the disruptions continued for a few days longer, it would have taken at least a month for their companies to recover. One week seems to be the maximum tolerance of the "just-in-time" global economy' (Lee and Preston, 2012). For the airline industry, the crisis came with exceptionally bad timing. Global recession had already pressed private operators to the margin, and the grounding of all flights for several days brought significant losses. In the summer of 2010, 13 airline companies went bankrupt in the UK only.

Yet, a joint, transboundary response to the crisis was not forthcoming. Europe[5] consists of 38 countries, including the 27 EU member states, each with independent national authority over their own air space. National authorities tried to bypass ICAO regulations by offering their own interpretations of the VAAC-produced maps and charts of the ash cloud's location and density (O'Regan, 2011, p. 25). Countries applied different rules on Visual Flight Rules (VFR) at lower altitudes (Johnson and Jeunemaitre, 2011, p. 60).

The persistent application of the ICAO guidelines outraged the airlines. The weather forecasts predicted stable weather, allowing the cloud to remain in place for days, if not weeks. The economic costs of indefinite closure would be staggering (Brannigan, 2011). In response, several commercial airlines launched[6] test flights through the ash cloud area and reported no problems. British Airways CEO Willie Walsh

joined a test flight to demonstrate publicly his confidence in aviation safety under the circumstances (Sawer and Mendick, 2011). Pressure on engine manufacturers to come forward with available data on their engine's ash tolerance levels mounted (Hutter and Lloyd-Bostock, 2013).

Making sense of an ash crisis

The Eyjafjallajökull ash cloud posed serious challenges to the many countries and organizations that were affected by it. However, the national authorities found it hard to agree on a common approach towards solving the transportation crisis. Underlying this decisional paralysis was the absence of a shared understanding with regard to the nature of the problem and potential solutions. Uncertainty played out along three dimensions.

First, there was uncertainty about the cloud. Experts remained unsure of the cloud's exact location and content (Brannigan, 2011, p. 109). As Budd et al. (2011, p. 32) observed: 'On the ground, confusion reigned. No one knew which sectors of the sky might be closed, when or the length of time they would remain shut.' This made it hard to agree on solutions. The lack of accurate guidelines and the dispersion of authority in the aviation safety domain produced a deadlock among international public and private actors. Pressures soon mounted to reopen air space, as millions of passengers got stranded.

Second, there was uncertainty about the consequences of the meltdown. As decision-making on aviation safety arrived at a standstill, so did logistical chains all over Europe. Many companies rely on cargo flights for high value and low weight products such as medicine, ICT manufacturing parts and automated machinery parts (Lee and Preston, 2012). Passengers stranded at airports all over Europe were left to themselves. Governments did try to bring them home, but the options were limited and at least passengers were safe on the ground. The airlines had no formal influence on the decision not to fly and did not consider it their responsibility to provide passengers with accommodation or compensation. Some airports, such as Schiphol Amsterdam, did provide sleeping space to stranded passengers. Industries and travellers soon began to voice their frustration through the media and through interest group lobbies. The ash crisis was becoming a full-blown political crisis.

But an escape from this dead-end situation required a joint reinterpretation of the threat. The no-tolerance policy was clearly not feasible, but individual governments could not take individual steps to deviate from the ICAO no-tolerance policy (Eurocontrol, 2010). Actors had to come to an agreement on how to overcome this gap by other means than applying the zero tolerance rule.

Third, uncertainty stretched to the question of responsibility: who was in charge here? Who could be held accountable for the consequences (revenue losses, bankruptcies, competition disadvantages)? Who should take care of the stranded citizens, particularly those with no means at subsistence level or special needs? Consular affairs? Airlines? Reception countries? Airports? Most importantly, it remained unclear who could or should decide on the zero-tolerance rule that paralysed air traffic in Europe. The ash cloud affected many countries and many sectors. As a result, an effective solution required the involvement of a variety of actors:

- National governments and their regulating authorities had the ultimate authority to open or close national air space. Each country had its own decision-making structures in place to cope with air space related crises (Lee and Preston, 2012).
- Eurocontrol facilitated cooperation between Air Traffic Management Systems by providing national Air Navigation Service Providers with information to estimate their capacity, and to plan and prepare their routing schema. Eurocontrol is a non-governmental agency at the European level, a functional cooperation between the aviation sectors of 40 involved countries without decision-making authority.
- The EU has had no authority with regard to (the closure of) air space. Since 2004, the EU had tried to gradually centralize air safety authority in the European Aviation Safety Agency (EASA), which was meant to become 'a "one-stop-shop" for managing the 27 member bloc's air space by promoting and regulating the highest common standards and environmental protection in civil aviation' (O'Regan, 2011, p. 23).
- At the international level, the ICAO sets the standards, procedures and protocols for aviation safety to which countries and airlines voluntarily comply.
- The ICAO, together with the World Meteorological Organization, also set up a global system for monitoring and advising on the presence of atmospheric ash. The London-based Volcanic Ash Advisory Center played a crucial role in this particular case. Its main task was to provide measurements of atmospheric ash concentration and dispersion, and recommendations in accordance with ICAO guidelines.

- Airlines, airports, travel agents and manufacturers, while major players in the aviation sector, had no formal decision-making authority in this case.
- Scientific experts on volcano eruptions, geophysics and meteorology had a crucial influence in providing information, models and predictions regarding the location, dynamics, composition and density of the ash cloud, but no decision-making authority.

The crisis was international and transboundary, but national authorities had to decide. The transnational nature of the ash crisis exposed an authority vacuum. There was no mechanism (such as majority rule, weighing of votes, solidarity clause, fallback arrangements) for decision-making among independent authorities, especially when interests and responsibilities clash. In addition, the participants in decision-making were largely unfamiliar with each other and each others' procedures (Brannigan, 2011, p. 110). O'Regan (2011, p. 25) therefore argues:

> Since it was unclear who had authority over what, European-wide institutions only offered the illusion of control without taking the initiative to 'govern' the closures and produce outcomes leading to the resumption of flights. The available governance tools were unable to help policy makers find a way out of the decision to close air space.

The search for an acceptable solution was further inhibited by different approaches towards risk assessment. Airlines felt commercial pressure to resume flying, but they would commercially suffer the consequences if something went disastrously wrong. The air traffic control agencies saw safety as their primary concern. Manufacturers (who held the key to more accurate and updated knowledge on engine safety tolerance levels), lawyers and insurers had a primary concern in avoiding liability. National aviation authorities sought to maintain trust and legitimacy.

Sticking to the precautionary principle in a situation of profound uncertainty may save lives. At the same time, a 'comparative analysis of expected costs and expected benefits of precautionary measures could serve as a useful check against overreaction to incidents' (Alemanno, 2011, pp. 8–9). This suggests that 'the precautionary principle was designed in part at least to make it clear that those who propose a technical activity bear the burden of proof of safety. In a crisis environment such principles can disappear under the weight of economic and political considerations' (Brannigan, 2011, p. 102). But there were no rules for how to resolve inconsistent and competing scientific evidence (Johnson and Jeunemaitre, 2011, p. 56).

The greatest step in uncertainty reduction was the redefinition of the acceptable risk, based on political and economic considerations (Lawless, 2011). When realization sunk in that the zero-tolerance approach would keep air traffic grounded for an indefinite time period, pressure grew to somehow lift the threshold without compromising aviation safety. As uncertainty lingered, the decision process shifted from the technical expert setting to the public arena. Political leaders had to decide and explain why it was now safe to fly in the same cloud. Uncertainty had been reduced to some extent by engine manufacturers providing test data on alternative tolerance levels (Macrae, 2011) and airlines and military operators conducting test flights; the latter argued that flying was possible within defined corridors. But all this evidence was not scientifically validated.

In time, a fundamental paradigm shift could be witnessed from strictly adhering to the precautionary principle centred on passenger safety to re-opening skies in favour of commercial and political interests (Brannigan, 2011, pp. 104–105, cf. Brannigan, 2010; Hutter and Lloyd-Bostock, 2013, p. 399). Uncertainty on the duration of the crisis and the chaos on the ground had become far more important than ash-related uncertainty: 'The general public imperative was to restore air travel back to normal rather than seek absolute assurances for safety' (Burgess, 2011, p. 76).

The U-turn in risk assessment and safety approach cleared the way for ending the crisis. The protracted air space closure had not only increased political and economic pressure on decision-making, it also had increased public impatience. Travellers seemed more than willing to fly near the end of the ash crisis. Then it happened: 'a twenty-year old safety regime governed by experts was overthrown in a two-hour meeting packed with politicians and airline executives' (Brannigan, 2010, p. 113). It is to this meeting that we turn next.

Facilitating transboundary sense-making: The EU takes charge

Europe has a fragmented air space. Air traffic control was (and still is) closely associated with sovereignty, and hence confined within national borders (Alemanno, 2011, p. 7). The limits of national problem-solving were painfully exposed by the ash crisis. The EU helped national actors

to arrive at a common understanding of the crisis, which facilitated a speedy, joint and ultimately effective response.

The EU Commission, together with the Spanish presidency of the European Council, took a first crucial step on 17 April by asking Eurocontrol to work out a coordinated European crisis management plan. During the weekend of 17–18 April, the European Commission, with the assistance of Eurocontrol, coordinated a series of meetings with representatives from national aviation authorities, air traffic control services, the airlines, airports and scientists (European Commission, 2010a). The purpose of these meetings was to 'coordinate air space management without compromising safety' (European Commission, 2010a).

The participants to these meetings had to find an agreement, based on available but fragmented scientific evidence (on ash cloud conditions, on engine tolerance levels and on meteorological measurements and prospects) on technical solutions for stronger European cooperation to maximize available airspace. Based on these meetings, the plan developed by Eurocontrol would offer possible strategies for flying restrictions that could be adopted by the member states. These could be implemented by Eurocontrol immediately (European Commission, 2010a). The new plan relied both on pre-existing risk assessment models of Eurocontrol and inspection results from the aircraft industry regarding the results of test flights and engine ash tolerance levels (Nohrstedt, 2013, p. 970).

The EU Commission proposed the Eurocontrol plan to the EU ministers of transport (the European council of transport ministers) on 19 April. In the words of Commission president Barosso: 'I will present the results of this meeting to European transport ministers at 15:00 this afternoon. I hope that this will provide ministers with the basis of an agreement on the way forwards' (European Commission, 2010a). The Commission, Eurocontrol, ICAO and national aviation authorities participated in this meeting.

The ministers of transport agreed on a common approach for flying through ash that same day. In a press statement, EU Transport Commissioner Kallas declared:

> This evening, I am pleased to report that we have made real progress. On the basis of a recommendation agreed unanimously by the national authorities and experts of the 38 Members of Eurocontrol, transport ministers have agreed to intensify European co-ordination and risk assessment of airspace management. The new air control measures come into effect from 0800 CET Tuesday morning.
>
> (European Commission, 2010b)

The Eurocontrol plan was adopted. A three-zone division was implemented in all EU member states with no-fly restrictions for high-ash concentration levels, controlled flying at lower-ash concentration levels and unlimited flying in no-ash areas.[7] The immediate result of this EU-initiated and coordinated decision was that airlines could resume flying the next day almost anywhere in Europe.

The new strategy was implemented in all EU member states on 20 April at 8:00 CET. Air traffic resumed immediately and two days later schedules were back to normal. The head of the British Civil Aviation Authority noted that 'we achieved what often takes years in 96 hours' (Lawless, 2011, p. 240). The EU Commissioner for Transport, Kallas, summarized the role of the Union: 'faced with this crisis, the first priority of the Commission was to intervene to facilitate the opening of airspace under strict safety conditions so that millions of stranded passengers could get home and to ensure that EU passenger rights are fully respected' (European Commission, 2010c).

Following the crisis, existing policy changes were accelerated and new plans were adopted (Alemanno, 2011, p. 8). Most of these reforms had been prepared and discussed long before the ash crisis, but now a sudden increase of political support paved the way for their swift adoption and implementation (Nohrstedt, 2013). The process of European integration of air space policy had previously 'been stalled by EU member states' reluctance to give up control over national airspace' (Nohrstedt, 2013, p. 974). On 4 May 2010, the Transport Council of Ministers decided to give the Single European Sky initiative highest priority. This meant that:

- EU coordinators would facilitate the quick creation of Functional Airspace Blocks (FAB), nine in number, based on operational requirements. The FABs should optimize and integrate the provision of air navigation services and related ancillary functions, regardless of state boundaries (European Commission Memo, 2011).
- A central European Network Manager was designated to coordinate European Air Traffic Control on a daily basis. This allows for a more harmonized and coordinated approach to risk and flow/capacity assessment.

- The European Aviation Crisis Coordination Cell (EACCC) was established. This is exactly what the EU lacked during the crisis (Alemanno, 2011, p. 8). The EACCC, when activated, is chaired by the Commission and Eurocontrol, and includes participation from the EU presidency, air navigation service providers, air space users and airports as well as other relevant stakeholders. This cell is designed as an additional support structure for the Network Manager (above) in a crisis situation. The new EACCC has been effectively tested during the 2011 Grímsvötn eruption (Parker, 2014).
- The EU Commission decided to accelerate the implementation of the European Aviation Safety Agency's (EASA) competences in air traffic management safety. EASA's greater role in regulating common safety standards further enhanced a harmonized European air traffic control approach.
- Commissioner Kallas established an Aviation platform of high level officials and executives from the aviation sector for long-term strategic advice regarding a sustainable future for air transport and for a competitive future of the aviation industry (European Commission, 2011, p. 3).

Conclusion: The EU as transboundary crisis manager

The ash crisis revealed modern society's intensifying dependence on air travel (O'Regan, 2011, p. 26). It showed to what extent fully integrated markets that operate at full capacity and with last-minute delivery schemes depend on seamless mobility. However, the crisis episode also exposed what can happen when national authorities are confronted with a transboundary crisis and fail to put together a transboundary response. Finally, the crisis revealed how the EU can play a role in facilitating a transboundary response.

The Commission initiative to bring together all stakeholders to develop a strategy to safely resume flying was crucial to overcome the deadlock. That joint plan was based on a redefinition of risk: the zero tolerance approach was replaced by a more differentiated approach that was supported by both the industry and its regulators. The decision to relax airspace restrictions was not so much the result of new knowledge but the result of revised perceptions among safety regulation experts on engine tolerance levels to volcanic ash (Nohrstedt, 2013, p. 972).

This paradigmatic shift, in turn, required joint sense-making: all actors had to agree that the approach in place was neither effective nor legitimate. Such a seemingly simple decision required a political rationale. The unanimous decision to implement this plan in their respective national air spaces by the European Ministers of Transport in the extraordinary meeting of the Council provided precisely that rationale. Without such a harmonized and coordinated solution, no individual national authority was willing or able to unilaterally open its air space.

The EU played a critical role in facilitating the orchestrated and joint revision of national risk perceptions. It did so without a clear legal basis. In fact, the EU Commission insisted that it did not have authority over national air spaces: 'there is no EU competence for air traffic management or in relation to decisions taken to open or close air space i.e. the EU Commission and European Parliament have NO role – it is for the individual member state governments to decide' (European Commission, 2010b). However, given the crisis – 'we are faced with an unprecedented shutdown of Europe's airspace. This situation is not sustainable. It is now clear that we cannot just wait until this ash cloud dissipates' – the Commission assumed a transboundary role to facilitate joint solutions (European Commission, 2010a).

The question, then, arises how the EU could do what member states did not manage to accomplish? We offer three reasons for the success of the EU in facilitating a transboundary crisis response in the ash crisis. First, the EU offered a trusted and proven venue to solve wicked problems. The European Transport Council was a venue where decisions on aviation policy were regularly made (Nohrstedt, 2013). Even if decisions to open or reduce airspace were normally national decisions, it was easy for the member states to use a Council meeting to coordinate their decisions and decide unanimously. The legitimacy for the EU's role and the plan it devised together with stakeholders was confirmed by the unanimous agreement on the final solution and its rapid implementation. Also, additional policy changes (the Single Sky initiative) to coordinate and integrate aviation policy at the EU level were endorsed by the member states in the slipstream of the crisis (Nohrstedt, 2013).

Second, the EU offered a natural platform for experts to convene and discuss a common technical approach. The EU has long provided a forum in which experts can work together to prepare decisions that have political repercussions (see for instance the EU's role in preparing risk regulation and health-related policies). In this case, the EU convened engine manufacturers with their scarce data on engine ash tolerance levels. Allegedly, manufacturers were hesitant to do so because of liabilities (Macrae, 2011). It collected the available results from the over 40 test flights done by several airlines and the air force of several

member states. The EU provided a forum for scientists (meteorologists, geologists), aviation regulators and industry representatives on 'neutral' ground – focusing the agenda on opening air space without compromising safety.

Third, the EU provided cover for decisions that are unpopular or potentially contested at home. In this case, member state authorities were eager to resume flying. At the same time, politicians must have worried that they would be held accountable for negative consequences of a premature decision. The EU has played this role for the longest time, but increasingly in the management of transboundary crises (think of the financial crisis). National leaders are happy to agree behind closed doors to common-sense decisions, only to loudly protest those same decisions back home. In similar vein, we can see how the EU provides political cover for risky decisions.

What does this mean for the future? In the introduction of this chapter, we pointed at an intriguing paradox: the EU has the least capacities in the area where it matters most (Boin and Rhinard, 2008). The findings of this chapter suggest the EU can play an important role in facilitating a transboundary response to a transboundary threat. In closing, we offer a few suggestions what the EU could do to further its role as a transboundary crisis manager.

To increase awareness of transboundary risks and the required response capacity, the EU could be more explicit about its potential roles. A common vision among member states is required, both on transboundary crisis management and the EU's role therein. Articulating such a vision would be an important first step to meet the challenges ahead. This vision should tie in with an encompassing vision on the EU's role in providing civil security (Bossing and Hegemann, introduction to this volume).

In preparing to meet such challenges, the EU can find natural allies in other international organizations, such as NATO and responsible UN divisions, which are by definition transboundary in their setup and response capacity. How do they increase compatibility and standardization among the systems of their respective members? How do they organize fast decision-making when a crisis escalates? And how can international organizations complement instead of cross each other's efforts in the transboundary crisis response? These are the types of questions that international organizations should not address by themselves, but in a dialogue with one another.

Sense-making is perhaps the most pivotal task in transboundary crisis management, because of the cross-border fragmentation of causes and effects. It is also the most feasible task, both from a functional and a political perspective. Though building a coherent operational picture of the ash crisis and preparing a shared diagnosis, the Commission managed to turn the tide during the ash crisis. The EU can build on this success.

The EU can and perhaps should be the go-to venue for transboundary crisis management efforts. National actors do not get together easily or naturally. The EU has the infrastructure in place to serve and exploit such gatherings. The EU needs to prepare to speed up the process of information sharing and the search for a common interpretation of escalating events (see Boin et al., 2014). By creating a true focal point for expertise, data collection, information sharing and international decision-making, the EU can become a hub for transboundary crisis management.

Notes

1. See, for instance, the recent comparative study on 22 European states conducted by the ANVIL consortium (http://anvil-project.net).
2. The EU coordinates member-state efforts to support an overwhelmed member state in dealing with a national disaster. The EU also coordinates member-state assistance to disaster stricken areas in other parts of the world (think of Haiti).
3. Eurocontrol is an independent international organization, founded in 1960. It is composed of 39 European member states and the European Community (which became a member in 2002). It coordinates air traffic flows across member states and support air traffic regulation (https://www.eurocontrol.int/about-eurocontrol, retrieved October 2014).
4. The ICAO policy was based on two previous experiences with attempts to fly through ash; the first one occurring in 1982 where a BA 747–200 (jumbo jet) flew into an ash cloud caused by the eruption of the volcano Mount Galunggung in Indonesia, causing temporary loss of all four engines. The second event occurred in 1989 where a KLM jumbo approaching Alaska flew across volcanic ash from the Redoubt Volcano, also resulting in the temporary failure of all four engines. None of these two events caused any loss in human life. The airlines that would accuse the authorities and scientists for being overly cautious had themselves been rather reluctant in the past decades to commission studies on the accurate thresholds (Alemanno, 2011, pp. 5–6).
5. Defined here in aviation terms (38 refers to the countries that were members of Eurocontrol, the organization that serves to facilitate air traffic management in European air space, at the time of the Volcanic Ash crisis).
6. KLM/Air France, British Airways, Lufthansa and Austria Airlines.
7. Unanimously, the transportation ministers of the member states adopted a differentiation of zones based on a new threshold of ash concentration at 2,000 μg per m^3, instead of the previous 200 μg. The zone between 200 and 2,000 μg constituted a controlled air space where certified aircraft could fly under conditions of regular engine inspection. A density above 2,000 μg would still

be a no fly zone, and anything under 200 μg would be considered normal air space (Nohrstedt, 2013).

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