

# Assembling European health security: Epidemic intelligence and the hunt for cross-border health threats

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## Abstract

The securitization of health concerns within the European Union has hitherto received scant attention compared to other sectors. Drawing on the conceptual toolbox of actor-network theory, this article examines how a 'health security assemblage' rooted in EU governance has emerged, expanded, and stabilized. At the heart of this assemblage lies a particular knowledge regime, known as epidemic intelligence (EI): a vigilance-oriented approach of early detection and containment drawing on web-scanning tools and other informal sources. Despite its differences compared to entrenched traditions in public health, EI has, in only a decade's time, gained central importance at the EU level. EI is simultaneously constituted by, and performative of, a particular understanding of health security problems. By 'following the actor', this article seeks to account for how EI has made the hunt for potential health threats so central that detection and containment, rather than prevention, have become the preferred policy options. This article draws out some of the implications of this shift.

## Keywords

Actor-network theory, critical security studies, epidemic intelligence, European Union, health security, materiality

## Introduction

We are hunters. Every day we hunt media sources and information, and...we try to bring that back to the village which is our round table. We then try to cook it, to present it and share it with the others; to feed them...with this kind of alerts. I cannot tell you what I will have on my agenda tomorrow. That is the beauty of this sport: we have to be completely open-minded. To look for information, we built tools of course. And I hunt all across the world. (Interview 1)

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Staff at the surveillance and response unit at the European Centre for Disease Prevention and Control (ECDC) in Stockholm never miss the opportunity to show off their crisis room, the Emergency Operations Centre; or, as such facilities are generally referred to by experts, 'the EOC'. For guests who have time, the officials operating the many IT systems, platforms, and devices to which the room is connected will proudly show a promotional video of how the EOC and the ECDC have improved thanks to 'lessons learned' from past crises such as avian influenza, the swine flu pandemic, the *E. coli* crisis, and the Ebola virus outbreak in West Africa. The visitor will be told, moreover, that the EOC is not just a room full of gadgets. It is a facility beyond the technical equipment and its physical space; it is also to be understood as a management tool, a hub of networks, and a working mode that is triggered during crises. In a health emergency, unofficially referred to as 'war time', the EOC turns into the hub of ECDC crisis activities both physically and virtually, as it connects staff with web-based tools and surveillance platforms that are global in reach. The guest will also be told that during such an emergency, the Epidemic Intelligence (EI) team, understood as the agency's 'disease detectives', are the first ones to be involved and the last ones to be dismissed (Interview 1).

Even in 'peace time' there is a sense of the EOC being on alert. Every morning, employees at the ECDC gather there for the daily roundtable meeting run by the EI team. Many of the agency's employees, even if not directly implicated, stop by to listen. At the edge of the room stand rows of computers, large monitors, displays of different time zones, video conference equipment, and portraits of former ECDC directors. At 11:30 am sharp the EI officers on monitoring duty begin their presentation of 'health threats' detected through their networked platforms and web-scanning tools. Run by the charismatic head of the Surveillance and Response Support Unit, Denis Colombier, it is no exaggeration to claim that the EI activities, the roundtable, and the EOC have become a daily point of reference for the EU agency's staff. While the looming possibility of the next crisis projected by these facilities is generally nurtured by ECDC staff as a reason for the organization's 'added value', some of its more research-oriented employees are less convinced. As we shall see, EI implies a shift away from established traditions in epidemiology, which focus on achieving health sustainability in relation to long-term social and environmental trends, towards a focus on impending crises. Nonetheless, shortly after the daily roundtable meeting is concluded, the follow-up and resulting 'rapid risk assessments' are sent out, as one of the ECDC's 'best-selling products' (Interview 5) to all ECDC employees, the European Commission, and EU member states.

The tour above provides a glimpse of what we understand as the heart of the European health security assemblage: a web of human and non-human relations producing priorities about threats to Europe and how they are handled. Despite the fact that EI represents a partial break with established traditions in public health, it has emerged both as the new paradigm for understanding how health and security intersect in Europe and as the privileged policy response at the EU level. How can the rise of EI in Europe be explained, and what are the implications of its emergence? While some scholars emphasize human agency in the securitization of health, subsequently enabling the rise of new forms of surveillance (Davies, 2008; King, 2016; Roberts and Elbe, 2017) or policy transfer processes that drive global shifts (Hartley et al., 2010; Baker and Fidler, 2006), we argue that greater attention ought to be paid to how these security technologies are embedded in relations that blend human and non-human agency. To unravel how surveillance, early detection, and containment support have, in an important sense, become both the problem of and the solution to health security in Europe, we call for consideration of both the human and the non-human in processes of securitization.

Conceptually inspired by the material turn in international relations (IR) and security studies (e.g. Aradau, 2010; Salter, 2015), we seek to contribute to the 'revalorization of the material' in the contemporary European security landscape (Müller, 2015). To that effect, we approach the growing European involvement with health threats as a security assemblage, of which EI has become the

defining knowledge regime. More precisely, we draw on the idea of an assemblage as a ‘feature-rich toolbox...sensitive to mundane matters of international cooperation, the role of objects and things, the importance of territories of governance, the vitality of expert knowledge, and the instability of governance arrangements’ (Bueger, 2018: 614). Our article contributes to recent work exploring securitization not as something generated by single and powerful actors linguistically evoking emergencies in order to justify extraordinary measures, but rather as the continuous assembling of heterogeneous elements into open-ended and ever-expanding networks of human and non-human entities (e.g. Huysmans, 2011; Bellanova and Duez, 2012; Andersson, 2016; Jeandesboz, 2016). We thus challenge both the assumption that securitization can be fully explained by referring to human practices *and* the opposite stance that the material is the only thing that matters in such processes. By examining the rise of EI as a set of ongoing translations, enrollments, and associations at the center of the EU health security assemblage, we also seek to better understand a broader trend in European security: namely, the self-sustaining character of security assemblages (Bengtsson et al., 2018; Boin et al., 2013).

The article unfolds as follows: the first part situates our contribution in relation to the extant literature on the material turn and European security. The second part sets out some of the analytical commitments and vocabulary that we take from the actor-network literature. In the third section of the article, we examine the European health security assemblage in detail. We start by following human and non-human actants in an attempt to describe the emergence of EI in the EU. We then outline different ways in which the assemblage has stabilized. Finally, we discuss the implications of this assemblage for the way in which health is problematized in Europe. The conclusion summarizes our main findings.

## EUropean security and the material turn

Security has seemingly become ‘unbound’ on the European continent (Huysmans, 2014). Securitization theory, however, as classically conceived of in the Copenhagen School, was arguably never a good fit for understanding security dynamics at the EU level. Several authors have noted that security within the EU is rarely constructed with an exceptionalist grammar, which the Copenhagen School famously sets as the threshold for securitization (Balzacq, 2008; Bigo, 2002, 2014; Huysmans, 2011, 2014; Neal, 2009). In recent years, however, under the label of ‘new materialism’, powerful challenges have emerged not only to the Copenhagen School but also to sociological practice-oriented analyses of security. At the heart of this research agenda lies an understanding of agency in non-anthropocentric terms, where forms of human and non-human agency intermingle in contingent and unpredictable ways. In a security studies context, Mark Salter sums up this commitment by asserting that

[s]ecurity cannot be understood solely as a set of speech-acts but also requires guns, tanks, drones, tear gas, badges, and fences. In each of these areas, there are non-human actants that fundamentally alter the condition of human possibility in ways that are unpredictable and irreducible to their constituent elements. (Salter, 2015: viii)

At its most basic, then, material approaches to security emphasize how ‘matter matters’ in various ways (Walters, 2014).

Whereas assemblage thinking has made certain inroads (e.g. Acuto and Curtis, 2014; Bueger, 2018), the work that has so far been the most influential in IR is actor-network theory (ANT) (see Best and Walters, 2013). One distinctive contribution of the latter to IR is an insistence on the place of the non-human in social and political life (a full overview of this contribution is beyond the

scope of this article, but see Barry, 2013). In the context of European security, work inspired by the material turn in general and ANT in particular have examined how mass data surveillance of travelers is sustained in the EU (Jeandesboz, 2016); how ‘suspicious’ commercial transactions are translated in processes producing security judgements (de Goede, 2018); how fences take on agential properties in European border security (Andersson, 2016); how security scanners generate effects (Bellanova and Fuster, 2013); and the role of a variety of human and non-human actors in the EU’s Passenger Name Record System (Bellanova and Duez, 2012).

In this work, technologies are no longer conceptualized as passive apolitical instruments, but rather as part and parcel of the workings of the diverse and heterogeneous elements that form an assemblage. Importantly, in moving away from instrumentalism, where technologies are understood as neutral tools of human intention, ANT’s alternative is not to resort to technological determinism or a ‘substantive’ view of technology, where human beings are posited as helpless victims (Bourne, 2012: 153–156). As it has been put in recent calls for examining the performative effects of security devices, ‘[d]evices may play different roles in different circumstances: in some cases they may well be simple intermediaries that do not change the course of a social process, while in other cases they mediate action – in other words, transform it’ (Amicelle et al., 2015: 297).

Scholarship in critical security studies inspired by new materialism in general and ANT in particular, then, has started to suggest a more diffuse and less anthropocentric understanding of securitization. Julien Jeandesboz has examined how the practice of mass data surveillance of travelers is sustained in the EU, showing that this policy comes about without a ‘decisive moment or actor, but [as] a series of interconnecting processes and patterns of action related to security concerns and frames where both human and non-human participants have influence over policy outcomes’ (Jeandesboz, 2016: 295). Similarly, Ruben Andersson’s work on European border security has shown the unintended, often counter-productive, character of intended material obstacles to immigration, such as fences (Andersson, 2016). Thus, ANT-inspired accounts of security challenge not only the Copenhagen School and much of the poststructuralist linguistic reductionism, but also the sociological reductionism of Bourdieu-inspired analyses of security. To grasp this challenge more fully, we need to unravel some of ANT’s analytical commitments and vocabulary.

## **Assembling security: Analytical commitments of actor-network theory**

Actor-network theory was developed in the 1980s, primarily by Bruno Latour, Michel Callon, and John Law, and emerged in a series of ethnographies of science, eventually becoming a major approach within the broader field of science and technology studies (STS). It is important to emphasize that ANT is not a ready-made method that can be applied in IR or any other discipline (Barry, 2013). Instead, ANT should be understood as cultivating a certain ‘set of sensibilities’ to empirical research (Mol, 2010: 265).

First, what does ‘a network’ denote in ANT? As Gerard de Vries clarifies,

*a network is a tool for description, not something out-there to be described. An ‘actor-network’ is not a network of actors, but an assembly of actants who ... are ‘networked’ and defined by other actants. (de Vries, 2016: 92, emphasis in the original)*

An actant is understood as any human or non-human entity that makes something happen. Actants can be ‘concrete or abstract, artificial, structural, anything – as long as they can be shown to make a difference’ (de Vries, 2016: 90). The task of the researcher, then, is not to accept a self-described network *as* a network. Instead, the first task of the researcher is to be as open-minded as possible as to what makes up an actor-network<sup>1</sup> and ‘by who and what and where action is performed, to subsequently describe in detail “the social”, the movements (translations) that progressively make up an

assembly, a collective, of heterogeneous – human and non-human – entities’ (de Vries, 2016: 95). The second task, de Vries continues, is to examine how the particular assemblage hangs together.

One way of understanding ANT is in terms of a ‘scaled down’ version of poststructuralist discourse analysis (Law, 2009). However, it is a form of discourse analysis that does not restrict itself to language but rather aims at understanding how particular slices of the world hang together; in other words, how different actors, objects, and things are assembled. The problem of exactly where to draw the boundaries around a particular actor-network resembles the problem of how to delineate a discourse. An actor, then, is ‘always a network of elements that it does not fully recognise or know’ (Law, 2009). All ‘actors’ are constantly *performed* and should thus be understood as outcomes and effects of a myriad of human and non-human practices, rather than as origins of analysis.

In ANT, *relations* then take priority over entities. Meaning is intrinsically relational. However, unlike semiotics, which operates with a purely linguistic understanding of signifiers (Saussure, 1959; Derrida, 1976: 27–73), an important cornerstone of ANT is to extend signification to material objects (Law, 2009). To grasp this ontological commitment, it is important to realize that Latour, along with his associates, came to extend an enterprise that began as an approach to the sociology of science to the social as a whole (Michael, 2017: 11). In his famous study of Louis Pasteur’s discovery of microbial fermentation, Latour showed that *pace* social constructivists who only focus on the *social* construction of knowledge, the microbe takes on a prominent role, and was inserted into a chain of translations that led to the discovery of fermentation. This would ultimately lead Latour to a radical rethinking of classical sociology away from ‘the science of social’ to ‘the science of associations’ (Latour, 2005). As de Vries put it, the social, according to Latour, ‘is a name for the movements to progressively compose a collective out of heterogeneous, human as well as non-human elements’ (2016: 86). Importantly, then, ANT does not seek to explain actor-networks by recourse to social forces such as capitalism, patriarchy, or other structural explanations, because these don’t have explanatory value in themselves but are rather made up of actor-networks.

More practically, the task of the ANT-researcher is to trace the associations between elements that create, stabilize, and extend networks. The analytical vocabulary that ANT scholars have developed over decades is extensive and complex. The basic purpose of these somewhat arcane concepts is to offer the researcher a neutral vocabulary, which imposes as few *a priori* commitments as possible on the elements in the network. ANT, in contrast to Bourdieusian field sociology, is not a ‘metalanguage’ with which actors may be situated, in accordance with an already existing conceptual framework of which the actors themselves are unaware (Latour, 1996: 199). Latour’s relationist sociology ‘expects the actors to understand what they are and what it is’ (1996: 199, 200). Thus, when approaching EI and the health security assemblage in the European Union, we do not impose any ready-made grid of intelligibility on them, but instead adhere to Latour’s injunction to follow the actors as closely as possible (e.g. Latour, 2005: 32).

### Analytical concepts

Lastly, we can introduce the ANT terminology that we use in this article. To begin with, *associations* are all the different links made between elements within a network, and ‘are engendered when one actor interposes itself between other actors, translating their interests, severing other associations, and aligning those actors with itself’ (Michael, 2017: 154). This follows Latour’s proposal to redefine sociology as the ‘tracing of associations’ (Latour, 2005: 5). The second basic concept, and central to much ANT-inspired work, is *translation*, understood as ‘all the negotiations, intrigues, calculations, acts of persuasion and violence, thanks to which an actor or force takes, or causes to be conferred on itself, authority to speak or act on behalf of another actor or force’ (Callon and Latour, 1981: 279). Translation happens when an actor’s interests are modified so that another

actor is enabled to speak on its behalf. ‘Whenever an actor speaks of “us”, s/he is translating other actors into a single will.... S/he begins to act for several, no longer for one alone. S/he becomes stronger. S/he grows.’ (Callon and Latour, 1981: 279). The idea of translation accounts for how a network grows, which is precisely by enrolling actors — through modifying or translating their interests. *Enrollment*, then, can be defined as ‘[t]he successful placing into designated roles of given entities. By translating the interests of these entities, [they] are dissociated from previous relations and placed into new desired associations so that they can perform appropriately within a network’ (Michael, 2017: 157).

Finally, following Latour, we distinguish between elements that simply carry meaning onwards without significantly changing it (*intermediaries*) and those that do change meaning (*mediators*). Whereas an intermediary may appear highly complex, it will matter little for the researcher concerned with tracing associations. Mediators, on the other hand, ‘transform, translate, distort, and modify the meaning or the elements they are supposed to carry’ (Latour, 2005: 39). Consequently, when we examine how the EU’s health security assemblage hangs together, we seek to separate intermediaries from mediators. Below, we examine the relations sustaining EI at the heart of the EU health security assemblage, through means of association, translation, and enrollment. We turn first to the emergence of the assemblage before turning to its stabilization and, finally, its implications.

## Assembling European health security

Over the past decade, epidemic intelligence has become increasingly important for how the ECDC operates and justifies its mandate vis-à-vis the broader context of global health governance. Just like in this broader network, the nested relations of EI at the EU level are understood by their enrolled actants as more dynamic but less rigorous than its older ‘sibling’: indicator-based health data (Paquet et al., 2006; Brownstein et al., 2008). More precisely, EI complements traditional disease surveillance by mining informal and/or digital sources, including articles and social media, through methods of ‘events-based surveillance’ (Castillo-Salgado, 2010; Paquet et al., 2006). It has been argued that, in a public health context, this shift implies a move away from what Foucault famously explored as the plotting of normality curves and conversely the identification of the abnormal, towards a search for the exceptional in, for instance, ‘big data’ (Roberts and Elbe, 2017). In line with the global networks with which the European health security assemblage is entwined (Amato-Gauci and Ammon, 2008), the kind of health problems detected therein are no longer assumed to be confirmed cases of specific infectious diseases that can be prevented, but potential threatening ‘events’ that can be of biological, chemical, environmental, or unknown origin (Weir, 2012). The latter clearly resonates with preemptive forms of governance and the emergence of a security-related assemblage merging with traditional infectious disease control.

The shift described above is evidenced by internal arrangements at the ECDC, where a team, a set of methods, and a certain toolbox associated with EI have, in key ways, assumed center stage. This is manifested in how the ECDC justifies its existence externally (EI and its rapid risk assessments are presented as the ECDC’s ‘best-selling products’ [Interview 5]), the expressions used (one wants to be ‘ahead of the curve’ [Interview 6]), the team’s practices (a daily roundtable meeting where the EI team presents its findings), and even the physical centrality of the Emergency Operations Centre (EOC) in the ECDC building in Stockholm. While the state of affairs described above is now generally supported within EU institutions, the emergence of EI has not been exempt from a certain degree of suspicion. As is generally known in the public health community, an overload of information with considerable background noise affects the usability of EI data (Brownstein et al., 2008). For instance, ECDC officers themselves mention that the web-scanning tools trigger alerts every time a Swedish band called *Dengue* has a concert (Interview 1). Likewise, the staff at

the ECDC are fully aware that rapid risk assessments generated in the fluid EI context rely on methodologies that are less rigorous than ordinary risk assessments, which normally take longer and produce more robust scientific advice. The positioning of the ECDC in the field of early detection and containment of new ‘health threats’, rather than long-term health challenges, is sometimes lamented by more research-oriented epidemiologists within the organization.

While it is beyond the scope of this article to assess the ‘effectiveness’ of the European health security assemblage compared to other national, regional, or global institutional manifestations of EI, we argue that EI has been positioned as the heart of both the ECDC and the EU health security assemblage. Despite some internal reluctance by ECDC officers more inclined towards other public health traditions and scientific research, EI has become central to how the ‘added value’ of the ECDC is presented in the EU and other fora (Interview 5). How, why, and with what consequences did these developments then unfold in this particular European context?

### *The emergence of EI*

While the focus of this article is the rise of EI within the ECDC, the European health security assemblage cannot be separated from broader global and European trends. Within the EU, a centralizing tendency regarding emergency management has taken hold across the institutional landscape (Boin et al., 2013), exemplified by the rise of a ‘crisis room’ in most Commission departments and EU agencies (Boin et al., 2014). This is part of a wider trend towards designated ‘incident response systems’ at the local and national levels intended to coordinate multiple response organizations under a temporary hierarchical structure (Moynihan, 2009; Bigley and Roberts, 2001). Parallel to this trend runs the rise of digital surveillance across multiple fields, producing a focus on preemption and early warning of a broad range of hazards. Leite examines these parallel trends in the EU setting, noting that ‘circular practices’ lead to both discursive and material copying across administrative units (Leite, 2015). Furthermore, the centralization of emergency management – which can be seen across local, national and international settings (Heymann and Rodier, 2004) – received a boost following the terrorist attacks of September 11, 2001 and, for global health surveillance, the reform of the WHO’s International Health Regulations in 2005 (Baker and Fidler, 2006). The latter, in particular, set off a major drive in global health governance to enhance events-based surveillance capacities (Brownstein et al., 2008). In Europe, efforts being made by the EU and WHO, amongst others, can lead to competitive efforts to demonstrate added value and international legitimacy (Elliott et al., 2012). In short, the EU health security assemblage analyzed here owes much to the broader context of global trends that have profoundly altered the priorities of international public health cooperation during the last three decades. In this institutional landscape, the networks nested in the ECDC have assumed an important role.

To fully understand how a set of actants at the EU level have been able to translate interests and successfully enroll members into a new constellation of relations dominated by the kind of health security concerns that EI defines, one has to go back to a shift in global health governance in the early 1990s. The latter has been referred to as the ‘emerging disease worldview’, as US scientists, public health officials, security analysts, and journalists positioned infectious diseases emerging in the developing world as threats to US economic and political interests (King, 2016). What emerged as a more or less deliberate set of associations that led to the mobilization of federal funding in the US, soon made the US Centers for Disease Control and Prevention (CDC) and the US Department of Defense turn their gaze towards rendering emerging ‘health threats’ governable through new kinds of global surveillance networks (King, 2016; Davies, 2008). Once established, however, the tools and platforms of EI took on, as we show below, a life of their own.

The early relations enabling expansion of a global health security assemblage were characterized by a zig-zagging of associations emanating from US health authorities and the US Department of Defense, but also fundamentally mediated by pioneering web-scanning tools such as the Global Public Health Intelligence Network (GPHIN) set up by the Canadian health authorities in 1997. The GPHIN facility was the first of its kind, in that it mined online data for the purpose of public health governance (Roberts and Elbe, 2017). An important platform enabling further growth of the network was the Global Health Security Initiative (GHSI) as a G7+Mexico response to the US anthrax attacks in 2001, which aimed at combating the deliberate release of hazardous substances while, as part of its scope, associating such acts with pandemic influenza (GHSI, 2017). Soon, this network, with EI at its core, successfully enrolled parts of the WHO administration in Geneva. This included the set-up of EOCs in the Geneva headquarters and regional offices for around-the-clock monitoring, as well as the establishment of the Global Outbreak Alert and Response Network (GOARN), drawing on data from GPHIN and other sources (Davies, 2008; WHO, 2007). This increasingly global health security assemblage was further entrenched through the 2005 International Health Regulations, obliging member state authorities to report all potential health threats that could result in a ‘public health emergency of international concern’ (WHO, 2007; Baker and Fidler, 2006). These developments have further translated interests in line with the various systems and working methods of the emerging global health security assemblage. Soon, its web of relations would also reach the EU.

As argued by Sara Davies, developments at the WHO level can be seen as an attempt by the organization’s staff to assert themselves vis-à-vis member states in a moment when national capacities of its main (Western) donors were developed for the purpose of ‘health security’ (Davies, 2008). As an organization that, from its birth, has been competing for influence with WHO Europe, the ECDC’s emerging assemblage also needs to be understood in this context. We argue that the rise of EI at the heart of the European health security assemblage can be described as a successful enrollment of actants into what would become a particular European branch of a broader global network. Soon, EU-specific actants, including scanning tools such as MedISys, an EU-wide training program in field epidemiology and the EU-level crisis rooms, would become mediators in positioning EU-level activities as part of, but still partly competing with, a broader institutional landscape (see Calain, 2007). Eventually, enrolled European actants would serve as regional EI spokespeople, aiding the expansion of a European network with its own particularities.

Notably, the European Commission was invited to become an observing party at the GHSI, and its officials in the Directorate General for Health and Consumer affairs (DG SANTE) soon thereafter launched a program for EU ‘Health Security’ (European Commission, 2001). Subsequently, the Council of Ministers also established its own ‘Health Security Committee’. The legal standing of the WHO International Health Regulations also played a major role, as it prompted alignment of the EU legal framework and subsequent coordination from the EU level to implement new principles and priorities.

Above all, the emergence of a distinctively European health security assemblage was facilitated by the establishment of a new agency: the ECDC. Prompted by the SARS outbreak, this agency was set up in Stockholm in 2004 (Interview 2). Once established, it provided the most important enabling hub for further expansion, also due to the fact that its value required constant justification vis-à-vis the EU member states and WHO Europe, while at the same time relying on their cooperation. At the level of personalities, a mediating role was also played by central experts in field epidemiology, notably Denis Coulombier, a long-serving champion of EI and one of the first experts to join the ECDC, in 2005, as the head of the Preparedness and Response unit (ECDC, 2017). It is perhaps no surprise that Coulombier had started his career at the Epidemic Intelligence

Service of the US CDC and also served at the WHO before taking on a leading role at the ECDC (ECDC, 2017).

### *Stabilization*

The ECDC would soon become a regional hub and mediator in expanding a denser regional health security assemblage around the priorities of EI. This assemblage cannot be properly untangled without examining the interaction between human activities and the systems and tools that constitute its integral parts. The events-based monitoring activities of the EI team are tech-heavy and more ‘networked’ than the rest of the ECDC and the Commission’s DG SANTE. Its systems and tools take a global approach, targeting events both within and beyond Europe. Furthermore, its disease reporting systems and multiple official and unofficial sources are considered to be accumulative, which means there is no limit to the number of platforms potentially tapped into by the ECDC’s EI officers (ECDC, 2010: 6). Consequently, EI staff are not only in frequent touch with the CDC and the WHO, but also connected to a range of global IT tools and facilities. Apart from GPHIN (see above), such platforms include the global subscription service ProMED, which sends out early warnings of potential threats from both animal and human diseases based on information from a wide range of official and unofficial sources (ECDC, 2010). These nested relations between human and non-human entities intensify during new outbreaks and work in ways that sustain the European health security assemblage. Through ongoing associations across national borders, interests are thus geared towards early containment of a kind of threat that is sudden, newly (re)emerging, and often assumed to originate outside Europe.

Enrollment of EU and national-level actants in line with the above priorities of EI has also been facilitated by EU funding programs and the Commission’s Joint Research Centre (JRC), which promotes the development of EU-specific IT tools for EI. Integrating national administrations into many of these systems constitutes a key EI activity, enabling a new web of relations to emerge and extend towards EU member state authorities, as well as accession and neighboring countries (Interview 9). The most important EU-specific tool is the EU Early Warning and Rapid Response System (EWRS) used for alerts and exchange of information through the opening of ‘threads’ by either a member state or the ECDC. Threads opened in this IT platform feature information found by EI officers or national experts of potential health problems of EU-wide concern, using an almost unlimited range of input systems and channels (there is little control over which sources national or EU officials use to start a new thread). Through the EWRS, employees are connected to official focal points at national health authorities, who in turn might run complementing or overlapping national monitoring systems. The EWRS also extends to designated national focal points in the health authorities of European Economic Area and European Free Trade Association countries.

Another critical tool sustaining the European health security assemblage is the EU-developed MediSys (Medical Intelligence System), a web-based monitoring and analysis system similar to the pioneering Canadian GPHIN. This tool scans the Internet for news articles and sorts them into predefined categories. An algorithm then helps to establish what can be considered ‘breaking news’ in each category based on the number of publications and certain key words (European Commission, 2007: 7). The information-sharing system HEDIS serves a similar function, in that it assembles news, assessments, maps, and steps forward regarding what are understood to be the most serious threats currently facing the EU (European Commission, 2007: 11). The sense-making enabled by these new technological tools ultimately shape the understanding of what a ‘health threat’ might be: a *potential* and urgent ‘event’ to be rapidly detected and immediately contained.

The EOC, physically at the heart of the ECDC, also contributes to the self-sustaining nature of EI. The use of the EOC room is so central that it has even taken on a social function for its staff:

Everyone at some point will come to or need the EOC.... The EOC is not only a physical place but also a function. We have such great facilities, and we are always around.... Even for things such as the World Cup, people ask me to put on the matches here.... We also hold job interviews here. Everything is available. (Interview 3)

The relations between the EOC, its technology, and the EI activities can be further illustrated by the comment below:

When I say that EOC is the heart of the ECDC, it is not only because of us [logistics officers] in the EOC. It's because the EI is using the EOC for its roundtable meeting and its screenings. That is why it has become the heart. We are not just a stand-alone function with rooms and gadgets. It's the whole function of running the EOC, and with the EOC it creates this feeling that it is the heart of the ECDC. (Interview 3)

Apart from the multiple relations upheld by information-sharing networks and systems at global level used inside this crisis room, the EOC itself is also connected to its own 'EOC net' of similar crisis rooms worldwide. In this constellation, efforts are made to harmonize design, functions, and capacities (Interview 3; see also Pawlak and Ricci, 2014). Its infrastructure is thus based on a common model used in several other locations, modeled on the US CDC crisis room. Moreover, the European Commission's Health Emergency Operations Facility (HEOF) also includes crisis rooms concerned with the operational management of health problem outbreaks, which work closely with the EOC in times of crisis. The HEOF, located in Luxembourg, was created as a physical and virtual meeting place for national health officials to coordinate during the management of crises, a function and space which further nests relations of the EU health security assemblage.

Other actants enabling stabilization of the assemblage include a range of legal documents and principles whose particular interpretation are present in the work at the ECDC as well as DG SANTE. Perhaps the most important actant is the specific mentioning of 'cross-border health threats' in the 2009 Lisbon Treaty, which provides a legal basis for EU activities. However, the EU Treaty and the existing secondary legislation also enshrine a comparatively large degree of national self-determination. The legislation establishing the ECDC (European Union, 2004), as well as the general legal framework for cross-border health threats (European Union, 2013), thus limit the ECDC's activities to monitoring and 'risk assessment' and *not* 'risk management', meaning the actual response to health threats (Interview 10). Within this narrow legal scope, EI activities provide a convenient way to expand the activities of the agency, without infringing on what is stipulated to be member state competencies in the EU legal framework. In many ways, the legal boundaries of the agency's mandate have *enhanced* the ECDC's role as what Greer has called a 'hub of networks' (Greer, 2012), which is very different from an executive agency where final decisions are made about response measures.

Other perhaps less obvious elements contributing to the stabilization of the network at EU level are the curricula of various training programs of the ECDC. The most important example is the prestigious two-year ECDC fellowship program in intervention epidemiology (EPIET). Through the EPIET curriculum, young clinicians, public health experts, veterinarians, and nurses are trained in the methods and tools of EI (Interview 8). The program attracts young epidemiologists across Europe, who can subsequently be enrolled in the EU health security assemblage through association with the various tools and systems of EI. Its strong alumni networks now populate both the ECDC itself and the member state public health authorities. Through trainings in general and the EPIET in particular, prospective EI champions can thus be formed and enrolled in the network of other human and non-human actants.

Finally, the spread of pathogens or health hazards themselves exert a degree of independent agency, for instance by forging new relations that expand the EU health security assemblage to other policy sectors. Unexpected hazards such as the Icelandic ash cloud in 2010, the crisis in 2011 when a cluster of *E. coli* bacteria was thought to originate in Spanish cucumbers, and the Fukushima nuclear accident in 2011 all prompted new associations beyond what is commonly understood as the health sector. This has resulted in an expansion of the all-hazards approach of EI through integration with EU early warning and response systems in adjacent fields such as food safety, animal health, deliberate release of hazardous substances, radiological leaks, and environmental hazards (Boin et al., 2014).

EI has emerged as the seemingly self-evident knowledge regime for defining and responding to what is now understood by many officials as a large chunk of Europe's health problems. Starting as part of a global network that grew via participation in and use of monitoring systems, standard-setting for events-based monitoring, and international agreements pursued by US and Canadian authorities (and later the WHO), a distinctively European sub-network emerged at the EU level. Its emergence and stabilization was enabled by enrolling a range of human and non-human actants including EU-specific early warning systems and web-scanning tools, a legal mandate pushing the EU into developing 'added value' in the field of early detection and rapid risk assessments, diffusion of technology through crisis rooms, US-trained epidemiologists, a prestigious EU fellowship program, and new possibilities opened by the accumulation and analysis of online data. Most importantly, by tapping into, analyzing, and diffusing information through various global and EU-specific IT tools and networks, the EU health security assemblage is allowed to expand – and interests are translated accordingly. In other words, once the interests of the various actants have been aligned, the demand grows for exactly the kind of knowledge that EI produces; i.e. a concern for detection and containment of rapidly emerging health hazards.

### *Implications*

The European health security assemblage, with EI as its cornerstone, is by no means a stable set of affairs. Yet, we have seen how a web of continuous associations, enrollments, and translations reinforce a sense of upheld order, and that the interests of officials in the EU and its member states have been altered accordingly. The expansion of this assemblage has also stretched further: elements of the bureaucracies in third countries have been enrolled via the networked activities of online platforms, trainings in various IT tools, and other kinds of transfer of EI infrastructure. While IT-mediated health governance also produces messiness that may lead to the inefficiencies and unintended consequences at times lamented by officials (French, 2014: 240), we argue in this article that EI as a new set of relations has nonetheless significantly shaped how health is problematized in the EU. In this section, we consider some of the implications of the ascendancy of EI.

In our tracing of the European health security assemblage, it becomes clear that Europe's approach to health security is being defined by relations originating in the field of applied epidemiology. The latter enjoyed expansion and development in particular through the advent of health IT enabling new ways of processing online data and global information sharing. This shift may mean that other problematizations in public health risk being overshadowed by a focus on early detection and containment, producing a particular understanding of health as intertwined with security and crisis. To be sure, we are not suggesting a move towards logics explicitly resonating with military defense, as prevalent in the case of the US CDC, where uniformed captains of the Commissioned Corps of the US Public Health Service are branded as

heroes at the public health frontlines (Pendergrast, 2010; King, 2016). Yet there is a distinctive kind of security problem produced when EI gets to define health hazards in Europe. While the latter might lead to political attention and resource mobilization, scholars have examined some of the implications of security-related problematizations in global health governance (Elbe, 2006, 2010; Nunes, 2013; Davies, 2008). In the case of EI, these include a preoccupation with ‘low likelihood / high impact’ events such as pandemics and exotic (re)emerging viruses; emphasis on containment and control of ‘symptoms’ rather than prevention and treatment of root causes; and a spatial understanding of health threats as originating mainly outside the West. In general, it may lead to a slippery slope of exceptionalism within international organizations. That exceptionalism is allowed to define emergencies and articulate particular solutions such as stockpiling of vaccines has raised concerns regarding cost-effectiveness and the role of commercial interests (Hanrieder and Kreuder-Sonnen, 2014; Elbe et al., 2014). Our account of the European health security assemblage also suggests a new temporal dimension to health problems: being ‘ahead of the curve’ in detecting new crises is how ‘added value’ is proven in European health cooperation. In this sense, there is a sentiment among officials that, for better or worse, the short term here-and-now, rather than prevention and the long-term, has come to dominate the activities of EU health security (Interview 4).

Our study emphasizes the role of both human and non-human forms of agency in producing many of these effects. It is due to the fact that EI is so entwined with global IT platforms and tools that Europe’s health security problem is understood as more likely to originate outside than inside Europe: detection of tropical diseases such as Zika, the Chikungunya virus, or West Nile fever are some topical examples. Enrolling neighborhood countries in using the toolbox of EI also reflects this understanding of what a ‘health threat’ might be and where it might come from. It is furthermore important to specify and understand why the new European health security problem is not necessarily related to an outbreak of infectious disease. Many of the reporting platforms and IT tools of EI are ‘all-hazard’ in their scope, which produces a focus on events or potential ‘health threats’, no matter their origin. As a result, designation of a health threat lumps together very different occurrences as similar kinds of events: infectious diseases are to be detected and contained in similar ways as bioterrorist attacks or hitherto unknown ‘Black Swans’ such as the Icelandic ash cloud. These threats expand beyond infectious disease, are seen as constantly looming, and therefore require early detection *before* they reach official indicator-based statistics. Once this particular understanding of a health security problem is diffused within the EU institutions and its member states, the demand for EI solutions of early detection and rapid risk assessment is likely to be further entrenched.

Perhaps the most striking implication of this approach to public health is that the notion of a ‘health threat’ is partly disconnected from existing infectious diseases already known to cause significant, persistent burdens on European societies. Such diseases may include tuberculosis, HIV/AIDS, measles, or even food-borne pathogens such as salmonella. While work on such long-term public health challenges (which more often than not affect vulnerable groups) are still carried out at the EU level, it is largely left to the member states and does not take center stage in the EU institutions. The known question of existing infectious diseases, however, does not resonate with the EI conception of a suddenly (re)emerging, unexpected ‘event’ assumed to originate *outside* rather than within Europe. A related consequence is that the anticipatory methods of EI, because they draw on unofficial and almost unlimited sources, have made EU health security something quite separate from existing understandings of infectious disease burdens.

The resulting understanding of a health threat also differs from the various kinds of problematizations emphasized in other public health traditions, often focusing on long-term trends and more rigorous scientific methods and sources to support public health programs rather than crisis

management. In terms of scientific advice such perspectives may, for instance, draw on traditions in public health that emphasize social and environmental determinants of health as integral to prevention of various health problems. While more comprehensive perspectives integrating environmental factors are not absent in the EU's policies against, for example, antimicrobial resistance, such knowledge is not considered the most central to EI and the EU health security assemblage. In short, the solutions defined by the EI focus on early detection rather than prevention. Consequently, addressing the root causes of a broad range of health concerns such as inequality, failing health systems, lack of preventive public health programs, and unsustainable practices in sectors such as farming and the food chain are not perceived as central to the protection of European citizens from 'health threats' in an EU context.

## Conclusion

This article addressed how epidemic intelligence (EI) has become the self-sustaining knowledge regime of what we refer to as the EU health security assemblage. Tracing relations extending from broader webs of global interactions, we have shown that EI in Europe is simultaneously constituted by, and performative of, a particular understanding of health security problems. The article showed how this set of relations is upheld by continuous translations and enrollments, involving a zig-zagging of connections that have enmeshed the technical and material with the human. Various tools, systems, training programs, and parts of the EU legal framework have become mediators for expanding the EU health security assemblage, not only to member state administrations but also to countries in the EU's neighborhood. Essentially, the role of technology and data collected online is central for producing the new kind of knowledge which now shapes how health security problems are understood and acted upon. While other activities drawing on different traditions in public health live on at the EU level, our ANT-inspired account helps to unravel why a particular kind of problematization has come to dominate. In this way, the EU's health security problem is generated through a perpetual hunt for external, cross-border threats to health to be detected and contained 'ahead of the curve'.

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## Note

1. We use 'assemblage' interchangeably with 'actor-network'.

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