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Knowledge Accumulation from Disease Outbreak Response

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Submitted for the degree of Doctor of Philosophy

University of Sussex

28th September 2018

Declaration

I hereby declare that this thesis has not been and will not be submitted in whole or in part to another University for the award of any other degree.

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Summary

This thesis explores the dynamics of knowledge accumulation from disease outbreak responses. It explores the development of a paradigm of disease outbreak response over the last 20 years, and then explains how this paradigm was challenged and re-entrenched by the 2013-2016 Ebola Crisis. The methodology for this thesis was split into two arms: a document analysis arm and an interview analysis arm. Based in an embedded case study, the document analysis makes the argument for a re-entrenchment of the paradigm through analysing the depth and detail of lessons learned from the 2013-2016 Ebola Crisis. Within this broad case, an analysis of interviews with 14 report authors and 23 report users allows for a detailed examination of the production and use of codified knowledge in disease outbreak responses. The thesis makes two primary contributions - one empirical and the other theoretical. For its empirical context, this thesis demonstrates a path-dependency in knowledge accumulation from disease outbreak responses and makes recommendations as to methods for ameliorating this. The thesis finds how a lack of meaningful engagement in expert panel processes can bias so-called lessons learned reports. In its theoretical context, this thesis contributes an additional empirical context to the literature on knowledge accumulation and learning. The thesis finds that knowledge accumulation in outbreak responses differs from other disaster scenarios because of an isolation of the Global Health epistemic community and offers evidence for codified knowledge as a useful tool and process for learning in complex, ambiguous, equivocal scenarios.

Acknowledgements

More people than I could ever thank were responsible for this thesis. I will forever be indebted for their emotional, intellectual, and personal support in some of my darkest and my brightest days. A wise woman once told me that a PhD is an incredibly selfish thing to do, so to all the people below I thank you for your patience and willingness to indulge my egotistical desire to call myself Dr.

First, to friends old and new. To Tom and Dan, members of my wedding party and all-round excellent men. Thank you for providing support through tough times, and for providing an escape to allow me to run away from all obligations and neglect responsibilities for an evening. To Naomi, Alice, Hannah, and Georgie – 'the Bridesmaids' – thank you for your bleary-eyed listening while I complained about my PhD over countless dinners and more bottles of wine than I care to admit.

Second, to my interviewees. This research literally could not have been done without you. Each and every interviewee in this study gave freely and generously of their time and insights. Fieldwork was a constant sticking point in the progress of my PhD but you all made it much easier and, dare I say, enjoyable. Those with whom I spoke over the phone or via Skype, through many technical difficulties and skips. I thank you all so much for your participation and making the research what it is.

Next, to colleagues at home and abroad. To all the SPRU PhDs, Research Fellows, and Professional Staff, thank you for the support, insight, and understanding over this process. Particularly to Jonas, Bipashyee, Andrea, Filippo, Alex, Martha, Anna, Cian, Ola, Becky, and Chantal. Youngha Chang, whose discussions always yielded insight and left me inspired. Frederique Bone, whose chats always left me energised and ready for more work. James Revill, who was kind enough to allow me to accompany him to Geneva on my very first piece of fieldwork (if it can even be called that) – the impressions gained there will last a lifetime. To all PhD students around the University whom I had the honour of representing in my second year, and all those with whom I worked doing so. To the members of the UDoc Steering Group, striving for improved mental wellbeing of PhD students. To colleagues at the GET CASE working group, at Global Biodefense,

at the Workshop on Bioterrorism, at the Pandora Report, and – most importantly – on #BiosecurityTwitter.

To the in-laws. To Kate, who so kindly housed us when we had nowhere else to go. I know we were messy, much less neat and organized than you'd like, and had more stuff that you could reasonably store in one room, but there were good times too; multiple parties, movie nights, barbecues, fire pits, and way more alcohol than I ever thought possible to drink. To Dave, who gives so freely and expects nothing back, you have always been nothing but kind and supportive of the path that your daughter and I have taken and that has led us to here. To Daniel, board games and video games, such is our modus operandi. Thank you for constantly providing me with a reason to bunk off and play – it was more necessary and useful than you can know. To Rolo, my buddy, who's a good boy?

To the various members of multiple Dungeons and Dragons groups over the years: thank you. Collaborative storytelling is a theme in this thesis but it was mostly a theme in my life throughout. Together we have cultivated the most fantastic stories, risen through tensions, solved myriad puzzles, locked many dice in the dice jail, and always come out the other side battered, bruised, and with a lot of stories to tell. Sian, Stephen, Charles, Sean, Dan, and Kya, thank you.

Next, to my supervisors. I cannot have been the easiest of PhD students, but I am sure I won't be the most difficult. To Michael Hopkins, I blame you for this. In February of 2013, I stepped into the first lecture of Innovations in Bioscience and Medicine and through a series of decisions, accidents, and a little luck, I ended up here. Your advice, kindness, and the countless opportunities you have offered me created the researcher that I am today. Thank you.

To Caitriona McLeish, this could not have been done without you. You shepherded me through my MSc dissertation and you shepherded me through this. You asked the awkward questions that I hoped nobody would ask. Every. Single. Time. You constantly drove me to both accept that I was good enough and that my work could – and would! - be better. You helped me believe in myself, when I thought that it was impossible. I never left a meeting with you feeling deflated, I was always confident and energised, ready for the task ahead of me. Your understanding, your willingness to push me, and your ability to hit right to the core of problems in my work were second to none. Thank you.

To Daniele Rotolo, the reason this was written in LaTeX. Your constant support and ability to diversify what I am thinking was incredibly valuable, your suggestions on

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methods always helped me clarify my thinking, and your constant use of a whiteboard to think out loud will forever be part of my thought process. The tensions between all three of my supervisors were, at times, frustrating and confusing – but in the end they have helped to produce a stronger thesis that is appreciative of multiple methods and the ways in which they can be integrated. Thank you all.

Now, my family. Jack, we don't talk often and we're very different people but watching you grow during my adventures in Brighton has been a pleasure. You're a lot less surly now, and that's a good thing! Mum and Dad, in so many ways this was all for you. You provided love, support, encouragement, and a constant belief that I can succeed in anything I put my mind to. Repaying all of that was part of the motivation for doing this. This has not been an easy journey for us all but in the end your love and kindness pulled us through. I hope to continue making you proud. You raised both myself and my brother right, and incredibly well for such young parents. Your marriage and approach to family have moulded how I view my own family, values, and future marriage – I hope to raise my kids half as well as you did.

Finally, to Kya. You gave me support, love, kindness, encouragement, ideas, and so much more. I cannot imagine where I would be without you, and I don't ever want to find out. You have been an incredible sounding board for ideas, you have been a comfort when it was all just too much, and you have been forever telling me to take days off when I look like I'm about to burn out. It is incredible how one person can change a life so much, but you are living proof. I am, simply put, better for knowing you. I can't wait to marry you and begin a long and happy life together filled with children, puppies, rescues, delicious food, and lots of wine.

Thank you all. This thesis is, and will always be, a collective achievement.

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Chapter 1

Introduction

Disease outbreaks, such as the recent Ebola crisis in west Africa, have plagued humanity for millennia. Outbreaks can cause huge loss of life, causing intense damage to economies, and doing long-term harm to social and political institutions. Like other disasters, disease outbreaks can be characterised as 'focussing events' which provide increased attention to issues surrounding the disaster (Birkland, 2009; Kingdon, 1984). Though this attention does not always produce 'knowledge' *per se*,[1] this attention does produce knowledge in the sense that attention is paid to the causes and effects of the disaster and may lead to recommendations for policy and possibly behaviour change. Successive disasters, then, can lead to an increasing stock of knowledge from which to draw on whereby new experiences are transformed, concepts are refined, theories disproven, new theories produced, new experiences transformed. The question this thesis asks is *how is codified knowledge accumulated from disease outbreak response?*

This thesis focuses on the production and use of *codified* knowledge in the form of so-called 'lessons learned' reports. In his work on learning from disasters and agenda setting, Birkland (2009) describes these documents as 'fantasy documents' and outlines how they are frequently inadequate analytically and fail to induce the required political and economic resources to implement recommendations. Furthermore, multiple scholars explore reports like these for their performativity and their attempts to put forth an authoritative narrative that re-establishes the pre-eminence of social institutions (Gephart et al., 1990; Brown, 2000, 2004). This thesis argues that this standard analysis is incomplete, finding that the utility of these reports depends upon their construction processes, their particip-

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[1] For example, many would not consider attributing causality for a volcanic eruption to a god's displeasure as 'knowledge', but this is still an articulation of cause and effect that could produce policy or behaviour change.

atory and analytical rigour, and the manner in which they present and disseminate their recommendations. This thesis finds that, rather than being fantasy documents instrumentalised by institutions trying to protect their authority, these reports are performative at an *epistemic* level as well as a social level.

This introductory chapter begins by highlighting the empirical rationale for this study, demonstrating the tendency for old lessons to be rediscovered rather than learned from over time. The chapter then briefly outlines the theoretical framing for the study, outlining learning cycles and the crisis features that arrest them. The chapter next moves on to outline the methodology for the thesis. The contributions of the thesis are outlined next, before the structure of the thesis is set out.

1.1 Empirical Context

The rationale for this thesis is motivated by the observation that so called lessons learned from epidemics seem not to be learned, but instead are rediscovered, suggesting a failure of knowledge accumulation in this important context. This section outlines the empirical context for this thesis, describing consistent lessons across outbreaks. The section then outlines the contemporary Global Health Security paradigm; the dominant paradigm for disease outbreak response.

Consistency in lesson learning is not necessarily a phenomenon unique to outbreak responses. Pollock (2013) at the Emergency Planning College performed a review of 33 different inquiries (including Pandemic Influenza, 2009) and found a number of 'persistent lessons learned' across 25 years of public inquiries. As Pollock puts it "[t]he consistency with which the same or similar issues have been raised by each of the inquiries is a cause for concern" (Pollock, 2013, p.7). It is therefore not necessarily surprising that lessons from disease outbreaks consistently re-occur.

On epidemic response, we can begin to see the similarity across lessons learned by looking at lessons from the 2003 SARS pandemic and the 2013-2016 Ebola Crisis. Table 1.1 compares the lessons codified in Chapter 5 of the 2003 World Health Report and the 2015 report of the Ebola Interim Assessment Panel. The similarity in recommendations between these two is striking considering they are *over a decade apart*. It is notable that some lessons seem to have been learned while there is less progress with others. In particular, we can see that lessons on reporting and communications are consistent across time but that the lessons for travel and trade restrictions as well as medical countermeasures have changed significantly. This thesis examines *why* this is the case.

Table 1.1: Comparison of the lessons detailed in the 2003 World Health Report and the 2015 report of the Ebola Interim Assessment Panel. Emphasis added.

Lesson Category	Outbreak Lessons Report	
	SARS (2003)	Ebola (2015)
Outbreak Reporting	"The first and most compelling lesson concerns **the need to report, promptly and openly, cases** of any disease with the potential for international spread." (p.78)	"At present there are clear disincentives for countries to **report outbreaks quickly and transparently**, as they are often penalized by other countries as a result. This was a significant problem in the Ebola crisis." (p.11)
Travel and Trade Restrictions	"**travel recommendations,** including screening measures at airports, appear to be effective in helping to contain the international spread of an emerging infection." (p.79)	"the International Health Regulations (2005) requires all countries to behave with appropriate responsibility towards the international community in the adoption of **travel and trade restrictions.**" (p.11)
Medical Counter-measure Production	"in **the absence of a curative drug and a preventive vaccine,** existing interventions, tailored to the epidemiological data and supported by political commitment and public concern, can be effectively used to contain an outbreak." (p.80)	"A platform for the development of **diagnostics, therapeutics, and vaccines must be put in place** and developed to such an extent that, when there is an outbreak, much of the preparatory and early research work will have been completed and it will then be possible to move quickly to production and deployment." (p.21)
Communication of response activities	"timely global alerts, especially when **widely supported by a responsible press and amplified by electronic communications,** worked well to raise awareness and vigilance to levels that can prevent imported cases of an emerging and transmissible infection from causing significant outbreaks." (p.79)	"Although an emergency media team was put in place to manage WHO's messaging and content, **the communication strategy was not able to counteract the very critical reporting** on the work of the Organization." (p.21)
Weak in-country health systems	"**weaknesses in health systems** can permit emerging infections to amplify and spread, and can compromise patient care. The strengthening of health systems thus deserves high priority." (p.81)	"WHO experts should continue to use their technical competence to develop normative guidance for policy and practices to be used by all actors, including for **health systems strengthening.**" (p.16)
Communication of risk	"one of the major difficulties faced during the containment activities for SARS [was] **risk communication about new and emerging infectious diseases is a great challenge.**"(p.80)	"**Communication of risk and promotion of appropriate safe behaviours need to be much more thoroughly researched** and documented, so that WHO and other entities engaged in this activity have a better impact in their risk communication efforts to the public." (p.21)

Sources: 2003 World Health Report, *Chapter 5, SARS: lessons from a new disease* (Ewart et al., 2003) & 2015 report of the Ebola Interim Assessment Panel (World Health Organization, 2015e)

We argue that a *Global Health Security paradigm* (GHSp) dominates the current logic for epidemic response. This paradigm has risen throughout the 21st Century with the increasing use and acceptance of 'health security' (Rushton, 2011; McINNES and LEE, 2006; McInnes and Rushton, 2012; Elbe, 2002, 2005, 2010) and 'global health' (Lakoff, 2008, 2010, 2017; Harman and Wenham, 2018) narratives of health. The rise in these two narratives of health has led to shifts in the way outbreaks are conceptualised: (i) narratives increasingly focus on outbreaks of human disease, originating mostly in less developed nations (Elbe, 2011; Rushton, 2011); (ii) the global and security aspects of these framings increasingly recognise health as a *transnational* endeavour (Hameiri and Jones, 2013), not soluble by a single state or actor; and (iii) the national security logics inherent in health security create an emphasis on borders and rapid responses (Davies, 2008; Dry, 2008).

Combined, these narratives form the framing of *Global Health Security* which conceptualises infectious disease outbreaks and has shaped the accumulation of knowledge from disease outbreaks to produce a system which relies on three pillars of response: (i) the national security logics and focus on outbreaks of human disease - particularly from developing nations (Elbe, 2011; Rushton, 2011) - leads to a focus on surveillance and monitoring of disease for rapid response (Davies, 2008; Dry, 2008, 2010; Roberts and Elbe, 2017); (ii) a recognition that health is transnational in nature (Hameiri and Jones, 2013) leads to increasingly centralised authority for WHO operational capacity (Davies, 2008; Kamradt-Scott, 2015; Hanrieder and Kreuder-Sonnen, 2014; Fidler, 2004); and (iii) the linkages between national security and health - particularly those linked to preparedness (Lakoff, 2008, 2017) and medicalising security (Elbe, 2010) - leads to a focus upon the rapid research, development and production of therapeutics, vaccines, and diagnostic technologies (Biomedical Countermeasures Elbe et al., 2014a; Roemer-Mahler and Elbe, 2016). This, we argue, has shaped - and is still shaping - the accumulation of knowledge over the last 20 years, leading to a development of certain, privileged knowledges, while others languish.

1.2 Theoretical Outline

Next, we turn to theories of learning and knowledge accumulation. Learning can be said to operate in a cycle, but that the nature of disease outbreaks (and crises more generally) inhibits this cycle. This section outlines the theoretical framework for the thesis.

First, learning and knowledge accumulation can be conceptualised by a cycle: task experiences are abstracted into knowledge which is then re-used in similar task experi-

ences. This conceptualization of knowledge accumulation as cyclical has been elaborated on by scholars such as: Kolb (1984) in education studies, Argyris and Schön (1996) in organizational learning, and Argote and Miron-spektor (2011) in knowledge management. In each case, experiences are transformed into knowledge — forming an *experiential* view of knowledge accumulation

This conceptualization, however, also demonstrates the central difficulty of learning from disasters. There are three different factors which Zollo and Winter (2002) highlight barriers to the learning cycle: *event rarity*, *event heterogeneity*, and *event ambiguity*. In the first instance, disease outbreaks do not happen every day, every month, or - especially when considering large-scale epidemics - even every year. This rarity means that, often, individual or group experiences can be forgotten or even lost with people who leave organizations, arresting the knowledge accumulation cycle.

Second, *event heterogeneity* means that, even if individuals remember previous experiences, they may not necessarily be involved or have knowledge applicable to the context. Outbreaks are complex events which can vary depending on pathogen, country context, availability of therapeutics, risk of spread, population migration patterns, and a myriad other possible variables. For many lessons, this variability limits their applicability across contexts, inhibiting the knowledge accumulation cycle.

Third, *event ambiguity* means that causes and effects of the outbreak are unclear and that various knowledges are equivocal in learning from them. The complexity of outbreaks means that individuals can disagree on causes and effects and, due to an inability to fully disentangle complex webs of causality, both are equally true knowledges. This ambiguity can inhibit the knowledge accumulation cycle by constraining the abstraction of experiences into new knowledge.

These three barriers to the knowledge accumulation cycle can impede the accumulation of knowledge from disease epidemics. According to Zollo and Winter (2002), codified knowledge is a method to overcome these barriers. Codified knowledge can overcome these barriers by transferring knowledge across time, place, and person as well as allowing for an explicit discussion of the ambiguities and complexities of outbreak response. Adding the repetition found in reports from outbreaks and disasters, so-called lessons learned reports form an interesting focal point and gap for research. This thesis therefore takes a focus on so-called lessons learned reports from disease outbreaks, studying the role of these reports in knowledge accumulation from epidemic response.

1.3   Research Design

Given these theoretical and empirical contexts, the main research question of this thesis is *how is codified knowledge accumulated from disease outbreak response?* The sub-questions which attempt to answer this in the context of the Ebola crisis are:

- What knowledge was codified from the 2013-2016 Ebola crisis?

- How was codified knowledge used during the 2013-2016 Ebola crisis?

- How was codified knowledge produced after the 2013-2016 Ebola crisis?

To answer these questions, this thesis analyses 267 'lessons learned' documents and 37 semi-structured interviews to examine the overall lessons from the Ebola Crisis and the processes of report production in the two embedded-cases. We focus on an embedded case study of the 2013-2016 Ebola Crisis, including historical context, literature analysis, and the study of two key policy reports: the Ebola Interim Assessment Panel, and the Harvard-LSHTM Independent Panel on the Global Response to Ebola.

The case selection for this thesis began with selecting the 2013-2016 Ebola Crisis as its broad topic. Having outlined the Global Health Security paradigm, the characteristics of the 2013-2016 Ebola Crisis challenged the pillars of response: the outbreak was discussed within the Global Health Security paradigm, as both a threat to security as well as a global challenge (Mcinnes, 2016); the surveillance regime was lacking, taking three months of confirm the first case (Wilkinson and Leach, 2015; Centers for Disease Control and Prevention, 2016) and that warnings about the severity of the crisis was not heeded (Liu, 2014, 2015b); WHO was highly criticized for its delayed response (Sack et al., 2014; Wilkinson and Leach, 2015; Boseley, 2015a) and even led to the UN Secretary-General establishing a full UN Mission[2] which superseded leadership away from WHO (Heymann et al., 2015); and medical countermeasures were not rapidly produced for use in the outbreak, clinical trials were impeded by ethical issues (WHO Ethics Working Group, 2014), and clinical trials were too late and failed to recruit sufficient patient numbers (Boseley, 2016). This absence of the dominant paradigm's response pillars, *despite the outbreak still being understood through the paradigm*, made exploring its lessons a crucial case for exploring knowledge accumulation. This is because if knowledge production follows the dominant paradigm in this context where the understanding fails to adequately respond, then it can be reasonably generalised to other, less-crucial cases.

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[2]The UN Mission for Ebola Emergency Response (UNMEER).

Within the context of the 2013 Ebola Crisis, two cases were embedded: the two cases, the Ebola Interim Assessment Panel and the Harvard-LSHTM Independent Panel, were chosen for their similar timelines, similar answers, diverging institutional contexts, and different processes. The Interim Assessment Panel was a WHO-mandated, mid-outbreak panel that was institutionally conceived and run with a very small number of people, including a highly influential chair. The Harvard-LSHTM Independent Panel had a large membership and, as its name suggests, framed itself as 'independent' of institutional pressures. Despite these differences both reports had similar themes, recommendations, and content. As a result, this epistemic convergence despite process and institutional divergence makes them useful test cases for how process and paradigm constrains knowledge accumulation.

This study uses two types of evidence to assess how knowledge accumulates from disease outbreak responses. First we conducted a meta-analysis of various reports across three samples (academic, operational, and policy) which delineate lessons-learned from the Ebola Crisis. This was targeted at producing an overview of the lessons, understanding how different constituencies produced different lessons, and examining the levels of analysis for different lessons. This was then mapped onto the Global Health Security paradigm to understand the extent to which this paradigm dominates the lessons.

Finally, the study also uses data from 36 semi-structured interviews with two samples: report authors and report users. In interviewing report authors, the aim was to understand the process by which each of the two reports were put together; what differences were there and what were the similarities? In interviewing users, the aim was to understand how and why users of these reports (across policymakers and practitioners) incorporate their content into their behaviours, if at all.

1.4   Contributions

This thesis makes three main contributions. First, we argue that analysis of lessons learned reports solely as performative *artefacts* is insufficient. Authors including Birkland (2009); Gephart et al. (1990); Brown (2000, 2004) present analyses of reports as performative objects which reconstitute trust in social institutions after a crisis, while authors including Weick (1993); Colville et al. (2013); Dwyer and Hardy (2015); Bosma et al. (2015) use reports as a basis for reconstructing *intra*crisis decision-making. We argue that an analysis which acknowledges the *processes* by which these reports are produced and used is equally important for a fuller understanding of their social role.

Second, a practical focus on the *processes* of codified knowledge production allows us to outline the role that reports play in knowledge accumulation from disease outbreak response. Much of the disaster management literature focuses on either the performativity of or lack of learning from codified knowledge products (Brown, 2000, 2004; Roux-Dufort, 2000; Easthope, 2007; Pollock, 2013; Coles, 2014). Furthermore, a number of studies emphasise the complexity and political difficulty of learning from disasters more broadly (Comfort and Kapucu, 2006; Comfort, 2005; Comfort and Louise, 2004; Corbacioglu and Kapucu, 2006; Deverell, 2009; Elliott, 2009; Kapucu et al., 2010a; Kouzmin et al., 1995). By focussing on knowledge accumulation through codified knowledge, this thesis contributes a characterisation of a hitherto understudied process for learning from disasters.

Finally, we argue that lessons learned reports which are conducted in a performative manner are not simply a missed opportunity for learning but an active re-entrenching of established assumptions and power structures, privileging certain types and holders of knowledge over others. In presenting the Global Health Security paradigm we demonstrate a set of lessons that are frequently cited and developed at the expense of other possible lessons. A key contribution of this thesis is demonstrating that the 2013-2016 Ebola Crisis was understood through the lens of this paradigm as well as demonstrating how codified knowledge production and use contributed to the re-entrenchment of this paradigm.

1.5   Thesis Outline

This thesis proceeds with Chapter 2 which explains the theoretical aspects of the study. It begins by detailing theories of knowledge accumulation in non-crisis scenarios before introducing crisis-learning elements. The analytical framework is then constructed using the theory of sensemaking as a lens to understand the process of knowledge codification. This section argues that codifying knowledge as a *process* is part of the value of codified knowledge.

Chapter 3, next, moves on to detail the research method. It begins by outlining the research design and the motivations for case selection. The chapter then proceeds to describe the process of document collection, delineate the samples, and explain the analytical process. The chapter concludes with an explanation of the interview structure, process, and analysis.

Following this, chapter 4 discusses the Global Health Security paradigm. The chapter begins by outlining the role and history of the World Health Organization, a central actor in disease outbreak response. The chapter then goes on to discuss the globalised and

securitized narrative which seemingly gave rise to the Global Health Security paradigm, examining its history, its discourse, and its implications. The chapter then moves on to examine the three pillars of response in the paradigm: surveillance for rapid response, central authority of WHO, and rapid production of biomedical countermeasures.

Chapter 5 argues for the 2013-2016 Ebola Crisis as a crucial case[3] in exploring knowledge accumulation from disease outbreaks. The chapter begins by outlining the challenges to the three pillars that the Ebola Crisis posed. The chapter follows up by detailing the results from the document analysis described in chapter 3. In this part of the chapter we shall see how lessons from the crisis broadly map onto the Global Health Security paradigm, with some notable exceptions. However, we will also see that lessons within the GHSp are explored in much more detail than those that are not. This lays the groundwork for exploring *why* in the subsequent chapters.

Chapters 6 and 7 detail the two case studies; the Ebola Interim Assessment Panel and the Harvard-LSHTM Independent Panel. These chapters outline a four-phase process for both reports which emerged from the analysis of interview data. These phases are: Framing and Scoping, Evidence collection, Solidifying a Narrative, and Dissemination and Engagement. The chapters outline these four phases and explain how the processes within them shaped the final report. Furthermore, the final phase will show how the utility of these reports is constrained by their production processes and thereby their impact.

Chapter 8 proceeds in three thematic sections, and then draws conclusions. The first thematic section justifies the first contribution of this thesis. It does so by describing the current understanding of lessons learned reports as performative 'fantasy documents' which play little or no role in learning from crises, and then challenging that analysis by arguing that *process* is an equally important analytical frame due to our case reports' input differences and output similarities. Next, the chapter explores the second contribution by describing various features of learning processes and highlighting how the processes of learning in these reports are absent of these features. Third, the chapter argues that these reports are constraining and guiding knowledge accumulation by observing performative processes through a learning lens and finding that their performativity does not just filter learning but shapes what is learned. Finally, the concluding section of this thesis restates the three main contributions, explores some limitations to the thesis and ends with

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[3]A crucial case is one in which a theory "fits a case in which it is least likely to be true, and thus is convincingly supported" (George and Bennett, 2005, p.9). By framing the Ebola Crisis as case which challenges the dominant paradigm (and thus the most likely to challenge assumptions), theorising which highlights path dependency is the least likely to fit the case and is thus robustly supported.

suggestions for further research and recommendations for policy.

Chapter 2

Conceptual Framework

2.1   Introduction

Having outlined our central problem, we turn our attention to conceptualising knowledge accumulation in disease outbreak response. This chapter looks at how knowledge accumulation operates in non-crisis contexts, how crisis affects these processes, and how lessons learned reports are constructed. The aim of this chapter is to show how knowledge accumulation in disease outbreak contexts has been under-theorised specifically, but also that the very processes by which knowledge is produced in crises more generally is a neglected dimension.

In order to do this, the chapter looks at three interrelated questions. First, *how is knowledge accumulated*? This question, addressed in the next section, entails understanding how knowledge accumulates in non-crisis circumstances. This section will explore the difference between learning and knowledge as well as exploring the dynamics of tacit and codified knowledge.

Secondly, Section 2.3 explores the question of *how does knowledge accumulation operate in crises*? This section begins by asking what it is that makes a crisis different from non-crisis contexts. The section then elaborates on barriers frequently cited as difficulties in learning and knowledge accumulation from crises like a lack of political will, low-resource commitments, and a fear-apathy cycle of attention that impedes the implementation of lessons learned. The section then looks at how event rarity, event heterogeneity, and event ambiguity can contribute to poor learning from crises. Finally, the section then elaborates on how codified knowledge offers a theoretical solution to these barriers.

Finally, the chapter explores knowledge codification to answer the question *how do lessons learned reports accumulate knowledge from crises*?   First, the section looks to

the 'lessons learned' report as an object of analysis - exploring its performative and accountability roles in crisis response. Next the section looks at how sensemaking has been employed to explore how learning from disasters operates and to conceptualise the way in which public inquiry reports perform an intrinsic part of re-establishing the social order. The chapter is then summarised by the construction of a conceptual framework detailing how codified knowledge forms part of the knowledge accumulation process from disease outbreak responses.

2.2 How is knowledge accumulated?

This section outlines conceptualisations of knowledge accumulation in non-emergency conditions in order to understand why these processes differ in *emergency* contexts. The first part of this section theorises learning and knowledge processes to understand the differences and similarities between the two. The section will highlight how learning and knowledge are two sides of the same phenomenon but that learning refers to the *process* of knowledge production, whereas knowledge processes refer more to knowledge as an *artefact* to be transferred, created, accumulated, etc.

Next the section moves on to characterise the *continuous* nature of knowledge accumulation. The section will explore the cyclical nature of learning and how knowledge accumulates in similar cycles. This cyclical and continuous nature of knowledge accumulation will then be explored later in this chapter to understand how crisis contexts differ.

Finally, this section will describe some social and political facets of knowledge. Predicated upon the conceptualisation of knowledge as both an epistemological artefact *and* a socio-political construction, the section describes the role of assumptions and paradigms in knowledge accumulation, highlighting the social and political aspects of knowledge accumulation.

2.2.1 The nature of learning and knowledge

The concepts of learning and knowledge are commonly discussed together because learning is a knowledge process. There exist a large number of theorizations of learning depending on the unit of analysis and disciplinary lens:

- In cognitive psychology, learning focuses on the individual development of knowledge through processes of conditioning, mimicry, and cognitive abstraction (Maier et al., 2001)

- In social psychology, learning focuses on the ways in which small groups transfer, transform, and transact knowledge with one another (Maier et al., 2001)

- In project management, intra- and inter-project learning focuses on the processes by which knowledge is formed in projects and transferred between them (e.g. Scarbrough et al., 2004; Prencipe and Tell, 2001; Dietrich et al., 2013; Ahern et al., 2014)

- In organization studies, learning is a key process in competitive advantage and maintaining absorptive capacity in order to learn from a firm's external environment (e.g. Crossan et al., 1996, 1999; Easterby-Smith, 1997; Easterby-Smith et al., 1998, 2000; Argyris and Schön, 1996; Argyris, 1999)

- In policy studies, learning is the process of knowledge development about the effectiveness of various policies and political strategies (e.g May, 1992; Hall, 1993; Knoepfel and Kissling-Näf, 1998)

In these conceptualisations there is a common thread: learning is a process whereas knowledge is a 'product'.

Considering learning as a process and knowledge as a product is a conceptual distinction that has produced the separate fields of *organizational learning* and *knowledge management* (Easterby-Smith et al., 1998). Organizational learning is a process oriented literature that aims to produce the capacity to learn within organizations so as to produce competitive advantage (Easterby-Smith et al., 2000). Knowledge management, however, is more focused on knowledge as a product, viewing the ways in which firms create, produce, transform, transfer, disseminate, share, codify, and integrate knowledge (Nonaka and Takeuchi, 1995). In essence, for organizational learning, the process of learning is an end in itself, whereas knowledge management sees knowledge as an end and learning as a means. This distinction forms the basis of the conceptual framework elaborated upon later in this chapter.

Knowledge, however, is not a simple ontological category. Conceptualising knowledge requires a recognition that different types and typologies of knowledge exist. The first, and most important, typology for this thesis splits knowledge into two types: codified and tacit. Polanyi (1962) is oft cited as the progenitor for this typology - his book, *Personal Knowledge: Towards a Post-Critical Philosophy* (Polanyi, 1962), elaborated on the tacit and codified elements of knowledge. The difference here lies in explicability - can knowledge be explained? If knowledge is written, spoken, drawn, or in any way recorded, it can be said to be codified. If it is not, or if it cannot be, then it is said to be tacit.

When we consider knowledge, however, this distinction is not a simple categorization. As Nightingale (2003) points out, codified knowledge requires a level of tacit knowledge to interpret. This is because the transformation from tacit to codified requires a set of assumptions (the reader can read English, for example) or prior understandings (the exact definition of a particular term, or what a particular symbol represents, for example) and thus those understandings are required to decode the codified into tacit knowledge. For Nightingale (2003), the tacit permeates knowledge and codification is a symbolic representation of an individual's tacit understandings - the codified is infused with the tacit.

This embedding of knowledge within individuals is the rationale behind Szulanski's understanding of knowledge as 'sticky' (Szulanski, 1996). In this conceptualisation, Szulanski notes that it is difficult to transfer knowledge from one individual to the next - and from one business unit to the next - because of this tacit element. Tacit knowledge is so embedded in individuals that losing the individual also results in a loss of knowledge. Combining this with Nightingale above we can come to the conclusion that all knowledge is difficult to transfer, because all knowledge is partly tacit (Szulanski, 1996; Nightingale, 2003).

This understanding has formed the basis of many theories and conceptualisations across knowledge management, organizational learning, and innovation studies. For example, in *An Evolutionary Theory of Economic Change*, Nelson and Winter (1982) show how organizational routines and processes embed tacit knowledge into an organization such that, when individuals leave, the tacit knowledge remains. This fits with the theory-of-action perspective (Argyris and Schön, 1978) above - which details how, even without consciously knowing it, actions in an organization have a *tacit* theory behind them which understands *why* a process exists and the expected outcomes. This theory behind the action is embedded tacit knowledge within the organization.

Further to this, Nonaka and Takeuchi (1995) - the authors credited with the shift from Organizational Learning to Knowledge Management (Easterby-Smith et al., 2000) - proposed a four-element typology of knowledge processes concerning two axes of tacit/explicit knowledge. Figure 2.1 (overleaf) shows the processes of the various quadrants, elaborated as *knowledge* processes, forming the SECI framework for which Nonaka and Takeuchi are frequently cited.

- Socialization: This tacit-to-tacit process entails the transfer of knowledge from personal to shared through imitation, demonstration, observation, guidance, practice.

- Externalization: This tacit-to-explicit process entails the codification of personal-tacit knowledge into explicit forms of knowledge like reports, diagrams, manuals, etc.

- Combination: This explicit-to-explicit process entails the combination of explicit knowledges into shared-explicit forms - this mainly constitutes the production of additional reports, manuals, etc. in order to collectivise knowledge.

- Internalization: This explicit-to-tacit process entails the performance of tasks making use of explicit knowledge thus transforming the users' tacit knowledge.

These four knowledge processes constitute the SECI framework (for Socialization, Externalization, Combination, and Internalizations), the basis of much of the knowledge management literature. The notion that tacit knowledge can be transformed and combined through processes of externalisation and combination into more explicit forms of knowledge for use in different contexts and time-periods is one we will come back to.

Figure 2.1: SECI Framework of knowledge conversion processes

Source: (Nonaka, 1994, p.19)

This distinction between tacit and codified knowledge, then, is useful for our purposes because it demonstrates how knowledge is embedded in people and processes. As we shall see later, this 'stickiness' (Szulanski, 1996) of knowledge creates a number of problems for the knowledge accumulation cycle in disease outbreak response. Further to this we shall see how the codification of knowledge, while imperfect, can help to bypass some of

these blockades in the cycle. Additionally, Nonaka and Takeuchi (1995) demonstrated how processes of socialization, externalization, combination and internalization allow for the transformation of knowledge between personal and shared and between explicit and tacit.

Each of these theories, however, tends to operate on the assumption that knowledge is a value-neutral or value-free object that can be transformed, transferred, and tailored to new situations freely. The acknowledgement that knowledge is 'sticky' is dependent upon the notion that tacit knowledge is 'embedded' in individuals and difficult to transfer because it cannot be articulated. While this is true, it ignores the *social dimensions of knowledge* which ties particular knowledges to particular technologies, assumptions, and communities. The next section of this chapter goes into more detail of the production and accumulation of knowledge, looking at its cyclic and continuous nature. The following section then explores how these processes are social and political, as well as epistemological.

2.2.2 The Continuous Nature of Knowledge Accumulation

Under this framework, we can begin to conceptualise knowledge accumulation in non-crisis contexts. The first concept we will utilise here is cyclicality. This refers to the way in which learning and knowledge accumulation operates in *continuous* cycles of experience and knowledge. This section will explore three conceptualisations of learning and knowledge accumulation as cyclical from Education Theory (Kolb, 1984), Organizational Learning (Argyris and Schön, 1978), and Knowledge Management (Argote and Miron-spektor, 2011). These three distinct, yet conceptually similar, will demonstrate how learning and knowledge accumulation tends to operate in *continuous cycles*.

David A. Kolb's highly-cited work *Experiential Learning: Experience as the source of learning and development* (Kolb, 1984) derives a theory of learning which is both scalable (in that it can be applied to multiple scales from individual to large groups and even socio-technical regimes (Byrne, 2011)) and provides a useful basis upon which we can build an understanding of learning. The theory (called Experiential Learning) is built upon the foundations of the work of three prior philosophers; Jean Piaget, John Dewey, and Kurt Lewin.

Dewey built his theories around higher education and the involvement of mature students and students from poorer background in the late 1930s; he notes that learning in students is more effective if connected to concrete experiences. Lewin, an organizational scholar, demonstrated that individuals in organizations learned best 'in an environment where there is dialectic tension and conflict between immediate, concrete experience and

analytic detachment' (Kolb, 1984, p.9). Finally, Piaget studied the cognitive develop-
ment of children and the development of knowledge creation processes; discovering that
intelligence as a process is directly related with increasing experience of the world.

Building upon the works of these three, Kolb noted a distinct commonality across the
theories: a dialectic interaction between concrete experience and conceptual schemes in
individuals' minds (Kolb, 1984). This means that the way in which students understand
the world is constantly informing how they interact with the world, and the way in which
the world responds and acts is constantly informing their understanding of the world.
Learning, for Kolb, is 'the process whereby knowledge is created through the transform-
ation of experience' (Kolb, 1984, p.38). This definition emphasises how experiences are
interpreted and inform our understandings of the world, which then proceed to impact
how we interact with the world.

Kolb's processes of learning are based around a cycle of moving from experience to
concept and back. There is a process of observation and reflection in which the experience
is inducted from to form concepts, and moving from concept to experience is a process
of testing by which concepts are imposed on experiences in order to test them (Kolb,
1984) (see Figure 2.1). For Kolb, then, learning is a *constant* cycle between experience
and abstraction; a cyclic interaction between being and thinking. In effect, for Kolb, stu-
dents learn by continually interacting with the world and conceptualising why interactions
happen.

Figure 2.2: The cycle of learning according to Kolb (1984). Experiences are transformed into knowledge
through processes of reflection and abstraction, then that knowledge is tested and used in new experiences.
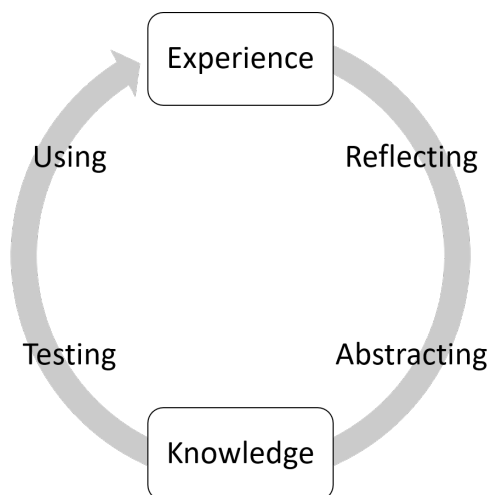
Source: Author's representation of Kolb (1984)

This cyclic connection between experience and knowledge is carried through to the

organizational domain by Argyris and Schön (1978). In their seminal work *Organizational Learning: A Theory of Action Perspective*, Argyris and Schon note that individuals, whilst working, hold particular theories about the consequences and meanings behind their actions. Learning, therefore, is a modification to a theory of action. Theories of action are also enshrined within organizational routines, procedures, and activities (Nelson and Winter, 1982). When an organization acts, it does not do so without an underlying theory as to what that action will lead to.

Additionally, there is a marked difference between espoused theory and theory-in-use (Argyris and Schön, 1978). Although an action may be said to be because of a particular rationale or a person may claim to act in a particular way in a situation (espoused theory), it may be for an entirely different motive or an entirely different action in the actual situation (theory-in-use). This difference is particularly salient for disaster/crisis when actions are constrained by a crisis mentality and a need to be reactive.

This experience-based view of learning has been adopted and extended to the organizational domain by Argote and Miron-spektor (2011). In their view, organizations learn through processes that transform task experiences into organizational knowledge. When confronted with a task, an organization will search through existing knowledge for a manner in which to operate – this can range from as simple as filling in a standardised form to performing a complex management operation. When the task is done, knowledge is produced (regardless of it being made explicit) which describes the prior knowledge's suitability for handling the task – knowledge is either confirmed and strengthened or it is modified in the face of new data. This new knowledge (and the old knowledge) is then searched through for appropriate ways to handle the next task, and so on ad infinitum. This cycling between experience and knowledge, for Argote and Miron-spektor (2011), is the learning process - leading to an accumulation of knowledge over time.

Learning and knowledge are therefore intimately linked, despite their conceptual distinction. Learning is understood as a *process* concept while knowledge is an artefact of that process. Moreover, it is noted that learning and knowledge accumulation operate in a similar manner. Both operate under cyclical processes by which experiences are transformed into knowledge and re-used in new experiences. The next section explores these processes in more detail, looking specifically at the function of paradigms and assumptions in creating path-dependent knowledge accumulation.

2.2.3 Paradigms and Assumptions: The Social & Political Dimensions of Knowledge

Knowledge Accumulation through a cycle of experiences and knowledge is not a wholly passive process, as Kolb noted it requires active interpretation and experimentation to understand the boundaries and probabilities of knowledge. Furthermore, knowledge processes of Socialization, Externalization, Combination, and Internalization are also active processes which require that individuals interact with one another. These active processes of experience interpretation and transformation are constituted by interactions between the epistemological (*how* is it known), social (*who* is knowing), and political (*why* people know) dimensions of knowledge. This section details the role that paradigms and assumptions play in the sociology and politics of knowledge.

One cornerstone of the sociology of knowledge is rooted in the history of science and Thomas Kuhn's (1970) notion of *paradigms*. Kuhnian paradigms are important for exploration here for two reasons: the first is that this thesis makes a claim for a Global Health Security paradigm, constituted by a securitizing and globalizing narrative and three central tenets (a rapid-response surveillance regime, increasing authority for the World Health Organization, and the rapid production of biomedical countermeasures) and these paradigms give us a set of criteria by which to assess this claim. The second reason is that we aim here to expand upon the social and political aspects of knowledge accumulation and Kuhn's paradigms (along with other conceptualizations of paradigms we shall explore later) provide us a basis upon which to examine these.

For Kuhn, and in particular his book *The Structure of Scientific Revolutions* (1970), a paradigm consists of two definitions:

> "On the one hand, it stands for the entire constellation of beliefs, values, techniques, and so on shared by the members of a given community. On the other, it denotes one sort of element in that constellation, the concrete puzzle-solutions which, employed as models or examples, can replace explicit rules as a basis for the solution of the remaining puzzles of normal science." (Kuhn, 1970, p.175)

A paradigm refers primarily, for Kuhn, to a set of assumptions and knowledges which a given community accept as a basis for advancing scientific understandings of nature (Kuhn, 1970). This paradigm is therefore a basis upon which knowledge is accumulated.

Under Kuhn, knowledge accumulation is termed the process of 'Normal Science' (Kuhn, 1970). Through the processes of 'normal science' Kuhn shows how the assumptions of a

paradigm refocus the lens of the science onto particular facets: "by focusing attention upon a small range of relatively esoteric problems, the paradigm forces scientists to investigate some part of nature in a detail and depth that would otherwise be unimaginable' (Kuhn, 1970, p.24). A paradigm, then, allows for a deeper *and increasingly complex* appreciation of those facets of science which are being focused upon than would be possible without a paradigm.

In this way, the phenomena brought into focus by a paradigm is understood in more and more depth through a specific set of puzzle-solving lenses (Kuhn, 1970). This notion of knowledge accumulation as increasingly deep and complex puzzle solving sits well with Argote 2011 and Crossan 1999 who conceptualise learning as a change in *either* cognition or behaviour. In essence, the facets of a phenomenon focused on by a paradigm are characterised by increased complexity and depth of analysis compared to those outside that paradigm.

While this explains the effects of paradigms and how they shape the accumulation of knowledge, there is also the issue of *which* paradigm dominates. Kuhn (1970) acknowledges this by elaborating that a successful paradigm must be "sufficiently unprecedented to attract an enduring group of adherents ... [but] sufficiently open-ended to leave all sorts of problems for the redefined group of practitioners to resolve" (Kuhn, 1970, p.10). In order to be successful, paradigm must offer a level of novelty to attract a community to its lens and it must offer a set of pathways for future research.

Although this Kuhnian conceptualization is specific to scientific knowledge, the notion of paradigms has been extended to other areas by other researchers. Dosi (1982), for example, demonstrates how abstraction of scientific paradigms[1] can be broadly applicable to technologies through technological paradigms. Dosi defines a 'technological paradigm' as "an "outlook", a set of procedures, a definition of the "relevant" problems and of the specific knowledge related to their solution" (Dosi, 1982, p.148). Again, we return to the idea that a paradigm is a framework of assumptions and lenses which define a particular problem set.

The conceptualization of a paradigm of Dosi (1982) comes with two effects, largely

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[1]To abstract this concept to technologies, Dosi 1982 conceptualises technology as "a set of pieces of knowledge, both directly "practical" (related to concrete problems and devices) and "theoretical" (but practically applicable though not necessarily already applied), know-how, methods, procedures, experience of successes and failures and also, of course, physical devices and equipment" (p.151-152), thus relating technology and the paradigmatic manner of their development as directly related to the knowledge content which underpins their functioning.

surrounding the technological implications of Kuhn (1970) and paradigms. Given the paradigm's focus on particular facets of science and exploration, two phenomena arise:

- Defining Directions to Pursue and Neglect - "a technological paradigm (or other research programme) embodies strong prescriptions on the *directions* of technical change to pursue and those to neglect" (emphasis original Dosi, 1982, p.152)

- An Exclusion Effect - "the efforts and the technological imagination of engineers and of the organizations they are in are focussed in rather precise directions while they are, so to speak, "blind" with respect to other technological possibilities" (Dosi, 1982, p.153)

These two phenomena contribute to what Dosi (1982) calls a 'technological trajectory.' "We will define a *technological trajectory* as the pattern of "normal" problem solving activity (i.e. of "progress") on the ground of a technological paradigm" (emphasis original Dosi, 1982, p.152). This technological trajectory essentially functions to guide the knowledge accumulation as it progresses.

Again, we see increasing depth and complexity in the function and capacity of knowledge accumulation, in this case related to the production and use of technology. For Dosi 1982, technological trajectories are constituted by increasingly complex systems of knowledge surrounding technologies and their uses. In particular Dosi 1982 argues, by drawing from Nelson & Winter 1982, that it is the *complementarities* within these systems which drive the path-dependency of paradigms. Increasing *complexity* of knowledge in the directions pursued, then, is another feature of paradigmatic knowledge accumulation.

This is not to say that the technological trajectory fully determines the accumulation of knowledge. As Dosi notes, "the selection operated at each level, from researcher to production-related technological efforts, among the possible "paths", on the ground of some rather obvious and broad criteria ... there might still be many possible technological paradigms that could be chosen" (Dosi, 1982, p.155). A paradigm, then, does not wholly limit knowledge accumulation to a single pathway, but it limits the problem-space to those defined within the paradigm and pathways are constrained to those within the problem-space.

For Dosi, a paradigm is similar to Kuhn's conceptualization in that a technological paradigm is a constellation of ideas, assumptions, and problems that underpin the production, use, and knowledge surrounding technologies. This definition creates two further effects stemming from paradigmatic thinking: an exclusionary effect, and a dictation of directions to neglect and pursue. These two effects contribute to the establishing, through

a technological paradigm, of technological trajectories that guide the pathways of technological progress.

Dosi's paradigms are also chosen through multiple *social* processes which function to establish particular technological trajectories. In this case, variables like economic interests, technological history & expertise, and institutional configuration "are likely to operate as focussing forces upon defined directions of technological development" (Dosi, 1982, p.155). Although Dosi speaks primarily in terms of economic pressures (marketability, profitability, etc.) the general principle is that paradigms compete on a *social* level as well as on an epistemic level.

In addition to Dosi's technological paradigms, Hall (1993) extends this concept to policy. Hall explains how "policy paradigms are rather like the scientific paradigms that Thomas Kuhn has identified, and we can take advantage of this analogy to develop some hypotheses about how the learning process in public policymaking might proceed" (Hall, 1993, p.279). Here we have a direct linkage between learning in policy processes and the role that paradigms play.

For Hall, more so than Dosi or Kuhn policy paradigms are more sociological in nature than they are epistemological. This is because "although the changing views of experts may play a role, their views are likely to be controversial, and the choice between paradigms can rarely be made on scientific grounds alone" (Hall, 1993, p.280). While this is also a core tenet of Kuhn's and Dosi's conceptualizations of paradigms, Hall places the socio-political - rather than the scientific - at the core of his conceptualisation of paradigms.

This is because policy paradigms are frequently, according to Hall, predicated centrally upon the authority of experts. "Faced with conflicting opinions from the experts, politicians will have to decide whom to regard as authoritative, especially on matters of technical complexity, and the policy community will engage in a contest for authority over the issues at hand" (Hall, 1993, p.280). When paradigms are competing - and when paradigms are established - the authority of certain experts over others plays a key role in the dominance of one paradigm over others, and thus the direction of knowledge accumulation.

Decisions surrounding the authority of various expert will necessarily be a socio-political one, rather than scientific. As Lancaster notes in the case of political decision-making surrounding Naloxone, *whose* expertise is valued is an incredibly important aspect of policy development. In Lancaster's case, patient and advocate expertise were frequently undervalued and the expertise of scientists were overvalued: "Time and time again, par-

ticipants bemoaned the limitations of the 'hierarchy of evidence' and the barriers it produced, turning instead to other ways of knowing" (Lancaster et al., 2017b, p.13). The very notion of a 'hierarchy of evidence' is inherently political, privileging certain types and sources of evidence over others.

Furthermore, as Clarke et al. (2003) stress with the case of increased biomedicalisation in the United States, these paradigms act in the reverse too. A socio-political field chooses a paradigm to become dominant, that paradigm then acts to shift the socio-political field to further entrench its assumptions.[2] As Clarke et al. put it, biomedicalization is "reconstituting the many institutional sites of health-care knowledge production, distribution, and information management" (Clarke et al., 2003, p.162). As paradigms evolve, they begin to remake the communities they evolve in - this evolution further shifts the socio-politics of knowledge and evolves the paradigm further.

Experimentation and failure create opportunities for competing paradigms to oust the dominant paradigm. Hall notes that "a policy paradigm can be threatened by the appearance of anomalies, namely by developments that are not fully comprehensible, even as puzzles, within the terms of the paradigm" (Hall, 1993, p.280). However, as Clarke et al. (2003) show, because the knowledge configurations have been shifted by the paradigm the manner in which anomalies are understood is still governed by the paradigm's central assumptions.

Paradigms, then, are constellations of assumptions and ideas which communities hold to be true in order to assess certain aspects of a phenomenon in more detail than would otherwise be possible. These paradigms guide the lenses of inquiry to highlight areas to be pursued, and to obfuscate areas to be neglected. In this manner, paradigms can guide *what* knowledge is accumulated along particular trajectories, accumulating knowledge in areas pursued and not in those neglected.

Additionally, paradigms are as much *social* phenomena as they are epistemological. The selection of a paradigm is a largely social process by which multiple constellations of ideas, assumptions, and their adherents compete and negotiate until one begins to dominate. As a paradigm becomes more and more established, the community that accepts it becomes shaped by its assumptions and ideas. This reshaping of the community then

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[2]This notion of a paradigm 'making' society essentially personifies the paradigm, which is not wholly accurate. More practically, as a socio-political field begins to accept the assumptions of a paradigm, society begins to *rearrange itself* to be more closely aligned with the visions provided by the paradigm. It is, however, useful here to imagine a paradigm as having agency because of its dual epistemological and socio-political features - ideas have their own power.

reshapes *how* knowledge is produced and distributed, creating varying politics of *who* can contribute *what* knowledge and *why.*

As we have seen in this section, knowledge can be characterised as either *tacit* or *codified.* This distinguishes between knowledge which is explainable by writing, talking, drawing, etc. (codified knowledge) and that which cannot be explained and must be demonstrated, practised, or observed (tacit knowledge). This distinction is not fully clear, however, and even codified knowledge has many tacit elements (Nightingale, 2003) which make it 'sticky' (Szulanski, 1996) and difficult to transfer from person to person or across time.

Furthermore, we have seen how recursive cycles of experience transformation and knowledge utilisation create a continual shaping and reshaping of knowledge in response to current contexts and needs. Knowledge Accumulation in non-crisis settings is, therefore, characterised by *continuity.* Continuous cycles of knowledge accumulation in individuals, in groups, and in organizations, are subject to the 'stickiness' of knowledge.

2.3   How does knowledge accumulation operate in crises?

The previous section outlined how learning and knowledge accumulation operate in non-crisis contexts. We saw how knowledge can be thought of as tacit (that which is inexplicable) and codified (that which is articulated). We also saw how knowledge accumulation can be conceptualised as operating in a *continuous* cycle, iterating between experience and knowledge. Finally, we saw that the knowledge accumulation process is a highly social one, frequently affected by social dynamics and power.

This section moves from the ordinary context of non-crisis times to the extra-ordinary context of crises. First, the section asks the question *what makes a crisis different?* This question addresses the features of a crisis that make it different from a non-crisis context. The answer to this question explores the very definition of a crisis as an extra-ordinary, discontinuous, and unstable event or context where normal or routine practices are insufficient or ineffective.

Next, this section moves on to the question *how does this affect knowledge accumulation?* This question addresses how these characteristics of a crisis (extra-ordinary, discontinuous, and unstable) affects the non-crisis knowledge accumulation processes. This will highlight the rarity, ambiguity, and heterogeneity of crisis events as disrupting the continuity of the knowledge accumulation cycle and therefore interrupting knowledge accumulation itself.

Finally, the chapter will turn to the question *what role can knowledge codification play?* This question focuses on knowledge codification as one possible solution to the interrupting of the knowledge accumulation cycle. Knowledge codification can allow for the transfer of knowledge (lessons) from one crisis to the next through its capacity to be transferred from one place or person to another. Additionally, knowledge codification is a process in and of itself which can aid in clarifying or codifying ambiguity for future interpretation. The section then summarises before moving on to discuss our analytical object - the lessons learned report.

2.3.1 What makes a crisis different?

Crises are qualitatively different to normal life. They are situations filled with profound fear and anxiety. Why are crisis situations so different to normal situations? What is it that makes a crisis so confusing and alarming? They are so different because our normal ways of acting and understanding are ineffective or insufficient for coping with the situation in front of us. They disrupt the normal equilibrium of our daily lives and puncture our sense of the world.

At its more instrumental, Keller and Al Madhari (1996) propose a definition based on a probabilistic model. For these authors, a crisis is defined as having ten of more fatalities, costing more than US$1 million, and directly affecting more than 50 people. This highly instrumental definition, however, does not give us any indication of what makes a crisis *qualitatively* different such that knowledge accumulation is affected.

Looking at the more qualitative ways in which crises are defined, it is clear that the broad consensus is simply 'not normal.' As Booth (1993) describes, a crisis is "a situation faced by an individual, group or organisation which they are unable to cope with by the use of normal routine procedures" (Booth, 1993, p.86). In essence, a crisis is a situation in which normal routines *cannot* take place - it is beyond the ordinary.

This definition, however, is not wholly useful for demarcating how knowledge accumulation is different in crises. Thus we move on to slightly more specific factors: Fink 2000, for example, describes crises as "fluid, unstable, dynamic events" (Fink, 2000, p.20), these events are therefore uncertain and shifting as time proceeds. Hermann and Dayton (2009) opt for a more constructivist or interpretivist definition, describing crises as "perceived to involved high threat, time urgency and surprise" (Hermann and Dayton, 2009, p.235). For these authors, a crisis is less about its non-normal features but its instability, its threat, and its unpredictability.

Following on from this, authors like Comfort and Louise (2004); Comfort (2005); Comfort and Kapucu (2006) and Kapucu (2008); Kapucu et al. (2010a,b); Kapucu and Ozerdem (2011); Kapucu and Garayev (2011); Kapucu et al. (2014) described crises as *complex* events requiring complex responses. For these authors, a crisis doesn't just need to involve high threat, high time urgency, and high instability, but a crisis needs to be multifaceted with multi-actor responses. This complexity is what separates a house-fire from forest-fire, a car crash from a multi-vehicle pile-up.

Additionally, crises can be thought of in terms of the threat they pose to our ways of thinking about the world. As Elliott (2009) notes, "crises may be distinguished from other events by the challenge they present to established assumptions" (Elliott, 2009, p.159-160). As our ways of understanding the world run into major problems, we enter a crisis. These definitions all have one seemingly common thread: 'normal' processes or thinking simply cannot cope in a crisis.

One further implication of this 'non-normal' understanding of crisis that is interesting for our purposes is the notion of crisis as *discontinuous*. In their explorations of how disasters and crises shape public policy, Kingdon (1984) and Birkland (1997) discuss how these types of events disrupt 'normal' policy processes and have a focusing effect. As Birkland puts it "whereas long-term social change is often the result of the ebb and flow of broader social and economic conditions, social change and conflict are often punctuated by sharp, sudden events" (Birkland, 1997, p.2). This discontinuity operates in two ways: 'normal' is punctuated by crisis, and crises are interspersed within 'normal'.

Crises, then, are characterised as the 'extra-ordinary' events that punctuate our normal lives. Crises are 'high-impact, low-probability' (Kingdon, 1984) events with which normal routines and thinking are unable to fully cope. They are dynamic and complex events characterised by uncertainty, instability, and unpredictability. Crises shatter our assumptions and cease the continuity of 'normal' activity. Next, we turn our attention to how these characteristics affect knowledge accumulation.

2.3.2   How do crises affect knowledge accumulation?

There are multiple, plausible explanations for the difficulties experienced in learning from crises. These analyses are likely complementary and explanatory to various extents in various case contexts. As noted by Coles in a review of learning from disasters "literature suggests several reasons for 'the problem' ranging from loss of corporate memory, denial and complacency in organisations to the lack of resources or the political will to change"

(Coles, 2014, p.3). Many of these explanations frequently refer to the problem of converting those lessons which are identified into policy or action. This thesis takes a deeper look at the step immediately prior - looking at the very production of lessons that are identified, not how they are translated into policy.

Having defined a crisis as *a dynamic, complex context characterised by uncertainty, instability, and unpredictability for which 'normal' processes and/or thinking are insufficient or ineffective*, it is incumbent upon us to explore how these characteristics affect the knowledge accumulation process. We proceed to examine three themes in this characterisation that impede the accumulation of knowledge from disease outbreak responses. These three themes (event rarity, event heterogeneity, and event complexity) are each explored in turn.

Event Rarity

One of the most frequently cited issues with learning from crises is that lessons are not enshrined in practice and that a lack of training leads to loss of learning between outbreaks (Pollock, 2013; Coles, 2014; Corbacioglu and Kapucu, 2006). At its core, this is an issue of time; crises are, by definition, rare events which do not happen with any predictable regularity or continuity which creates space for knowledge loss.

As we saw in the previous section of this chapter, one of the key features of knowledge accumulation is *continuity*. Abstracting knowledge from a task experience and then being able to apply that knowledge to future experiences allows for the refinement of concepts and building of knowledge in individuals and organizations (Kolb, 1984; Argote and Miron-spektor, 2011). However, this knowledge is often tacit and 'sticky' (Szulanski, 1996) which makes it inherently difficult to transfer. This embeds knowledge within individuals which may not necessarily be involved in future experiences of the same type.

Additionally, March (2010) argues that rare events' infrequency creates problems in inferring causality. "Organizations learn from experience, but learning seems problematic when history offers only meagre samples of experience" (March, 2010, p.1). Lampel et al. (2009) further this line of argument by noting how rare events are often a class of event all their own, inhibiting comparison across types. "For many, if not most, individuals and organizations, a rare event is a unique experience in a class of its own" (Lampel et al., 2009, p.837). The learning from rare events then is not simply characterised by 'sticky' knowledge that cannot be transferred, but ambiguous and uncertain knowledge that may not be applicable to the next event.

Event rarity, then, is first an interruption of the knowledge accumulation cycle - it

allows for knowledge loss prior to implementation in new experiences. Second, it means that training (and therefore more resources) are required to maintain tacit knowledge between events. Finally the rarity of events means that they are frequently a category of their own, making comparisons across types difficult.

Event Heterogeneity

As briefly explored above, events like crises and disasters are so rare that often they differ in vast ways. An earthquake, a volcanic eruption, a tsunami and a disease outbreak are clearly not the same and require different responses. Even within the same type of event, the characteristics can vary enormously, often making it difficult to fully incorporate knowledge from one event to the next.

In disease outbreaks this is especially true. Katz et al. (2018) produced a tool which visualises the problem-space for disease outbreaks based on 12 response-relevant characteristics[3] producing a total of 34 million possible scenarios. Even discounting those which are practically impossible, this process still produced 22 million distinct outbreak scenarios. Each of the 22 million would not require entirely bespoke responses but it is clear that, with even 12 response-relevant characteristics, no two outbreaks will map onto one another precisely.

The effect of this on knowledge accumulation is again one of *continuity*; when events are different, the lessons are not wholly usable or testable from one to the next. For example, one lesson from the Ebola Crisis in this thesis concerns the orderly and compassionate isolation of patients - this is a necessary measure to avoid the further spread and infection between patients and healthcare providers or patients and loved ones. While this is a sensible lesson for outbreaks of Ebola or other haemorrhagic fevers like Marburg fever, vector-borne diseases like Zika virus or Lyme disease are not transmitted from person-to-person so quarantine measures would be ineffective and excessive. This inapplicability interrupts the cycle of experience and knowledge and limits the capacity for learning from

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[3]Origin (natural or intentional); Type (animal only, human only, or zoonotic disease); Means of spread (communicable or non-communicable); Route of transmission (airborne, bloodborne, waterborne, foodborne, or vector-borne); Diagnostics (point of care and biosafety levels 1, 2, 3, and 4); Medical countermeasures (antivirals, antibiotics, vaccine, post-exposure prophylaxis, or none); Outbreak location (accessible to international community or not and whether conditions are non-permissive owing to conflict or other instability); Affected populations (all, pregnant women, children, elderly, or targeted attack); Applicable personal protective equipment (respirator, containment suit, mask, gloves, and gown); Morbidity (graded at five levels from very low to very high); Response level (local, intermediate, national, regional, or global); Policy measures in place (national, international, or none)

disease outbreaks.

The different contexts limit the usability of lessons, but further to this they limit the capacity for experimentation. Varying contexts mean that, as in the case of event rarity, individuals or agents responding to one outbreak are not necessarily responding to the next. As Yaqub (2017) notes in the case of vaccine clinical trials, fragmentation of knowledge limits the possibility for knowledge accumulation: "in order to accumulate technological knowledge, institutions needed to develop both visible and invisible infrastructure ... the concerted effort to ensure qualitative attributes were interpreted into a set of shared quantitative design targets for the development of operational principles" (Yaqub, 2017, p.483). This lack of capacity to fully collectivise knowledge, as the composition of any response is different, limits the opportunities for knowledge accumulation.

Knowledge accumulation is limited by event heterogeneity in two ways. First, without similarities from one outbreak to the next it is difficult to fully apply lessons from any one outbreak to another. This is particularly salient given the number of possible outbreaks that could occur (Katz et al., 2018). Secondly, the variations in responders limit the capacity for collectivising knowledge and building on the experience of one another, reducing the scope for advancing knowledge.

Event Complexity

Event rarity and heterogeneity, then, mean that lessons from each event are either lost or inapplicable. This, however, assumes that lessons are clearly identifiable at all. Frequently the complexity of the event itself confounds the accumulation cycle during the abstraction process - highly complex events are more difficult to fully comprehend, making clear cause and effect difficult to discern.

The high complexity of crises and responses ensure that even the best planning cannot fully cope with some events. Kouzmin et al. (1995) note how "under crisis conditions, concepts such as 'comprehensive' or 'integrate' disaster planning and emergency management are difficult to sustain" (Kouzmin et al., 1995, p.27). This means that even during an outbreak, what has been planned or prepared beforehand may still be insufficient or ineffective - leading to difficulties in applying newer knowledge.

Secondly, the complexity limits the ability to abstract knowledge at all - limiting the building of theories from experience. Comfort (1996) notes that "there are too many agents involved in performing too many different functions simultaneously under radically altered conditions to attribute direct, linear causality to any one agent or condition"

(Comfort, 1996, p.3). Deverell (2009) echoes this: "in the midst of crisis the cause and effect loop might be difficult to distinguish as acting and thinking under time pressure, value complexity, and uncertainty may be interwoven" (Deverell, 2009, p.80). This complexity, then, can obfuscate deriving lessons at all, even if they could be transferred effectively.

The discontinuous nature of disease outbreaks is manifested through the rarity, heterogeneity, and complexity of the events. Event rarity inhibits the application of knowledge in new contexts because tacit knowledge is likely lost through personnel turnover. The limited number of rare events also means that only a small number of instances can be learned from, limiting the scope for experimentation. Event heterogeneity similarly limits the scope for experimentation by virtue of the limited comparability between events. Additionally, heterogeneous events mean that lessons learned are not necessarily applicable to future evens, even if they are learned and internalised. Finally, the vast complexity of the events means that, regardless of whether a similar event occurs relatively quickly after the another, the causes and effects of the various lessons are subject to multiple interpretations.

2.3.3 What role can knowledge codification play?

In the face of this extra-ordinary, rare, unique, complex, and uncertain event how can we accumulate knowledge? Given that our normal processes of producing and using knowledge are ineffective and insufficient, how can we continue to learn from our experiences with these events? The focus for this thesis is on attempts to codify experiences, to write them down or articulate them verbally in order to explain them to others or send them to new places and times. Codification plays a dual role in knowledge accumulation from disease outbreaks: a role as a knowledge artefact, transferring knowledge from one person, place, or time to another; and a role as a knowledge process, giving opportunity to collective reflection and sensemaking about the crisis at hand. We proceed here by exploring how codified knowledge can be useful in ameliorating the three barriers to knowledge accumulation identified in the previous section: relocation ameliorating rarity, combination ameliorating heterogeneity, and synthesization ameliorating complexity (Zollo and Winter, 2002).

Relocation

Codified knowledge as an artefact is principally useful for knowledge transfer. As has been argued by many theorists (for example, Steinmueller (2000, 2001); Cowan and Foray

(1997); Cowan et al. (2000); Cowan (2001); Kogut and Zander (1992)), the codification of knowledge produces an artefact which can be used at different times, by different people, for different purposes. For example, the creation of handbooks or manuals allows individuals across space and time to learn new methods or techniques, or even how to operate and care for machinery. This codification takes know-how and allows others to use it.

The principle utility, here, of codified knowledge is that it allows individuals in different outbreaks to use knowledge found in previous outbreaks. As put by Cohendet and Steinmueller (2000) "Knowledge that has been codified into informational messages can be reconstituted at a later time, in a different place, or by a different group of individuals with varying degrees of effectiveness depending upon the 'cognitive framework' of those attempting to use this information" (Cohendet and Steinmueller, 2000, p.197). This means that if an outbreak re-occurs in a new location or new time, the lessons can still be transferred between individuals. This ameliorates the effects of event rarity by allowing for the continuity of knowledge across events over time - restoring the knowledge accumulation cycle.

Combination

What we also see with authors like Kogut and Zander (1992) is that the codification of knowledge can also play a role in allowing for knowledge *combination*. Echoing this, Prencipe and Tell 2001 note that "knowledge codification is important because of the gains that can be made through new combinations of stocks of codified knowledge" (Prencipe and Tell, 2001, p.1377). By writing a piece of knowledge down, that knowledge is preserved for use in new areas or by new people who can combine it with other knowledges and produce *new* knowledge.

Moreover, the very process of codifying knowledge into a more generalised form creates a need for combining previous experiences with new. This is emphasised by Echajari and Thomas (2015) who note that, through codification, "organizations are forced to go beyond the mere accumulation of experiences and instead build effective capabilities about generalizing an experience from one deal to the next" (Echajari and Thomas, 2015, p.972).

This combination of knowledge allowing for generalization allows for an overcoming of the heterogeneity of crisis events. In particular, generalizing knowledge and combining general rules with context-specific knowledge allows for knowledge to be used and tested in new contexts. This reduced the barrier that heterogeneity plays because the codification of knowledge forces some generality and allows for testing in new contexts.

Synthesization

The process of codification, as we explored briefly in a previous section, involves the transformation of knowledge from tacit to codified. This transformation is not a simple substitution of tacit for the codified, it is a process of knowledge creation in itself. This process requires the *creation* of new knowledges. Cowan and Foray (1997) argue that three separate activities are required for this process: the development of messages to explain previously created knowledge, the production of models to explain causal processes, and the presence (or production) of a common language to describe the models. These processes of codification not only require a translation of tacit to codified but a *synthesization* of new, old, and previously unfound or unnoticed knowledges into codified knowledge.

This is further explored by Yaqub (2017) in the case of the poliomyelitis vaccine. In this case, the authors argue, "knowledge may not necessarily integrate readily, testing often requires standardisation, management, and co-ordination to create comparability between experiments and ensure fragmented knowledge accumulates through the stages and cross-sectionally across different groups working in parallel" (Yaqub and Nightingale, 2012, p.2144). In effect, the capacity to synthesize disparate fragments of knowledge is an important facet of knowledge accumulation. This is particularly important given that, as Nightingale (2000) shows, the codification and standardization of clinical trial protocols vastly improved the capacity for knowledge synthesization.

This process of synthesization is particularly appropriate for ameliorating the complexity barrier that is frequently encountered in knowledge accumulation from crisis. In these situations of causal complexity where causes and effects are not necessarily linear and have multiple inputs, outputs and feedback loops, knowledge codification processes allow for a reflection on experience and synthesization with previous knowledges (Echajari and Thomas, 2015). This process of increasingly accurate characterization of complex causality through synthesizing new and old knowledges allows for an amelioration of the complexity barrier to knowledge accumulation.

Crises, then, are typified by their extra-ordinary characteristics. In crisis contexts, 'normal' thinking and actions are unable to cope with the pressures placed upon them. Further to this, crises can be characterised by their high-threat, time-urgent, and unstable nature. These properties give rise to high complexity, demanding complex responses, and blurring the capacity to distinguish linear causal processes.

These characteristics of crises create a number of blockages to the knowledge accumulation cycle, impeding its progression. First, the extra-ordinary characteristics of crisis mean

that these events are rare, thus impeding the capability of actors to implement knowledge obtained in one event into another due to loss of memory or personnel turnover. Second, the high-threat and unstable nature of the crisis, as well as its complexity, means that no two events are the same. This limits the applicability of knowledge from one crisis to the next and interrupts the usage process of the knowledge accumulation cycle. Finally, the complexity of crises blurring causal processes makes abstracting knowledge from experience difficult at all. This difficulty in producing knowledge from crises reliably further impedes the knowledge accumulation cycle.

The codification of knowledge, however, can help overcome these barriers. The ability of codified knowledge to be transferred and used by different groups, at different times, in different places means that knowledge can be more continuous across time and space. Second, the ability of codified knowledge to be combined with new situational context-specific knowledge allows for codification to ameliorate the heterogeneous barrier to knowledge accumulation. Finally, the codification process' space for reflection and synthesization of old, new, and different knowledges allows for a reduction and articulation of complexity which allows knowledge to be accumulated.

2.4 How do lessons learned reports accumulate knowledge from crises?

The previous section noted how we characterize crises as an extra-ordinary event for which our normal ways of understanding or acting are insufficient or inapplicable. The previous section further noted how the codified knowledge's ability to be of relocated, combined, and synthesized allowed it to overcome the barriers of event rarity, event heterogeneity, and event complexity which impede knowledge accumulation. This section's aim is to develop further the role of codified knowledge in crises by focusing on the construction of 'lessons learned' reports.

This section proceeds with a first look at lessons learned reports. The section will look at their role in accountability, allowing a society to apportion blame or a culpable institution to shift blame. We will also explore the performativity if the lessons learned report, looking at how these reports often are 'fantasy documents' (Birkland, 2009) which do not necessarily constitute knowledge or learning but are constructed to *look* like learning. The section then proceeds to explore the 'sensemaking' conceptualization to understand how lessons learned reports perform on a societal level and also how they are constructed.

2.4.1   The Lessons Learned Report

The lessons learned report - and the public inquiry that is often the precursor to them - is an attempt at discerning a *post-hoc* understanding of a crisis or disaster. As such, they are laden with meaning and symbolism beyond their attempts at learning. As such, as seen in the previous section, they are frequently studied as political and social objects, rather than as knowledge objects or processes. This thesis focuses on exactly that, the knowledge role of lessons learned reports. This section will explore the performative and accountability roles that lessons learned reports play.

Accountability

Lessons learned reports have been conceptualised as performing an accountability function by apportioning blame to actors deemed to be responsible for the failures that caused the crisis (Brown, 2004). Accountability, it is theorised, ensures that decision-makers and planners take the needs and priorities of particular constituencies into account - thus guiding choice and judgement through what Tetlock (1985) calls an 'acceptability heuristic.' In effect, accountability guides decision-making through sanctioning decisions which are not perceived to be in the interests of the people or organizations to which a decision-maker is accountable.

This apportioning of blame, through which accountability is established, in lessons learned reports functions primarily through the description of events and a discourse of judgement. As Brown (2000) argues, "retrospective reconstruction (description) of events and judgemental commentary are thus integrated and mutually reinforcing: a rhetorical strategy that permits a more authoritative distribution of blame and absolution" (Brown, 2000, p.63). This rhetorical construction of blame through first stating *what happened* and then providing a commentary on *why it happened* is a common tool for apportioning or ameliorating blame.

This creation of a particular narrative is prescient given that the report authors themselves are accountable for the report that they write. As Carroll (1995) explains " the teams who diagnose operational incidents are members of a society or culture with shared assumptions, and because they are accountable for their report, they are encouraged in various ways to put forward acceptable accounts of incidents, their causes, lessons learned, and improvement strategies" (Carroll, 1995, p.185). This means that not only do the report authors have control over who to blame, but they are also influenced by *who could blame them.*

This linkage of who can blame who and for what leads to what Moynihan (2009) calls the 'politics of accountability.' Through a complex system of actions and discourses, "actors seek to claim credit and shift blame. This can lead to defensiveness, unrealistic narratives, and opportunism" (Moynihan, 2009, p.192). This political element means that "information is suppressed or used as ammunition to rationalize behaviour and deflect blame rather than identifying useful lessons" (Moynihan, 2009, p.192). This defensiveness means that while reports are believed to (or are intended to) play an accountability role, they are often only 'performing' that accountability role.

Performativity

The performativity and political dimensions are a very commonly studied aspect of lessons learned reports (Gephart, 1984; Gephart et al., 1990; Brown, 2000; Brown and Jones, 2000; Brown, 2004; Easthope, 2007; Birkland, 2009). Akin to the features of accountability described above, lessons learned reports are effectively political and social objects which attempt to provide an authoritative account of the crisis and to re-legitimate social institutions.

First, Gephart (1984); Gephart et al. (1990) find that lessons learned reports "develop acceptable interpretations for the events, and thus to re-establish the legitimacy of social institution" (Gephart et al., 1990, p.29). This notion of an 'acceptable interpretation' derives from the various attempts by different constituencies and groups to 'make sense' of a crisis in different ways (Weick, 1988). These varying accounts are reduced to a single 'acceptable account' by the processes of report construction (Gephart et al., 1990). This single 'acceptable account' is then used to justify and re-legitimate the actions and existence of social institutions (Gephart, 1984).

This process of constructing a report's narrative through negotiation of cultural understandings of 'what happened' is often suffused with power relations. As Brown (2004) notes, "some voices are more (and some less) privileged, and it may often be more appropriate to describe sense as a power effect rather than a negotiated consensus" (Brown, 2004, p.46). Like knowledge production in a previous section, this process of producing an acceptable interpretation of a crisis is more social and political than it is epistemic.

Second, reports themselves need to perform accountability and learning to justify their own existence. In particular, in order to have any effect, a report must be received by its audience as true and authoritative. Reports do so "through recourse to a set of rules governing knowledge, its production and representation, which they present as establish-

ing valid and reliable accounts" (Brown, 2004, p.97). In effect, the report itself performs authority through its "appropriation by a reader who relates it to his or her own context and experience in a creative or hermeneutic process rather than merely reproductive fashion" (Brown, 2004, p.97). This dialogue between reader, author, and report is the manner through which a report 'performs' its authority and becomes accepted as *the* narrative of a crisis.

Additionally, the reports themselves boost their own authority by making claims of comprehensiveness and provenance (Brown, 2004). For example, stating a defined number of sources and informants creates a sense that the report's authors has 'all the information' and created a 'true' account of events based upon them - i.e. they were comprehensive (Brown, 2004). Provenance provides legitimacy for the very performance of a review and discusses the circumstances of its commissioning and why it exists - this provides legitimacy for the document itself (Brown, 2004). These further embed the authority of the report within the report's text.

Similarly, the very learning that these reports produce is discussed as 'fantasy learning' by Birkland (2009). In this understanding, Birkland returns to Argyris and Schön (1978) work on learning, utilising their conceptualisation of single- and double-loop learning[4] to argue that while reports are often useful for single-loop learning and error-corrections in the theory behind actions. However, Birkland (2009) argues that the reports are not useful for the assumption-challenging, double-loop learning because of the limited time that has often elapsed between events and the reports describing them.

The key point for our purposes is how Birkland (2009) describes them as 'fantasy documents.' This description is used by Birkland because the reports "are often created and disseminated for rhetorical purposes, even if their authors somehow *believe* that learning has really occurred" (Birkland, 2009, p.146). This idea that reports are disseminated for rhetorical purposes fits with the work of Brown (2000); Brown and Jones (2000); Brown (2004) on public inquiries as sites of authority-building and demonstrates the performative function of these lessons learned reports.

Birkland (2009) furthers this argument by outlining five types of investigation and policy change which demonstrate the often tenuous link between lessons learned reports

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[4]For brevity this was omitted from our discussion of Argyris and Schon's work. Single- and double-loop learning refers to whether learning was assumption-challenging (double-loop) or not (single-loop). For the authors, single-loop learning is more about error correction and asking how theory-in-use can be improved, whereas double-loop learning is about challenging the theory-in-use itself and asking whether it actually achieves what is desired (Argyris and Schön, 1978).

and policy learning. Table 2.1 summarises the five types of report-linked learning theor-

Table 2.1: Table of the five types of lessons learned report outcome based on Birkland (2009)

Lessons Learned Report?	Policy Change?
No Investigation	Policy change not linked to learning
Report is agency serving, incomplete, or states the obvious	No change
A thorough and careful investigation	No change
A thorough and careful investigation	Change occurs but is not linked to findings of report
A thorough and careful investigation	Change occurs which is linked to the findings of the report and learning from the event

Source: Author's elaboration on Birkland (2009)

etically possible from no investigation with policy change ('superstitious learning' (Levitt and March, 1988)) to a thorough and careful investigation with policy change linked to the outcomes of the report. Clearly, the final option is the ideal type and Birkland (2009) details, in a flow-chart format, this ideal model for event-related policy change.

Figure 2.3 shows this ideal-type model of event-related policy change. What is interesting here is that it is a *cycle of experience accumulation* rather like our conceptualization of knowledge accumulation from the previous section (Argote and Miron-spektor, 2011). Furthermore, Birkland (2009) notes various *social* barriers to this cycle like a lack of attention or group mobilization which produces limits to the accumulation of experience for policy change.

Both Table 2.1 and Figure 2.3 show ideal *outcomes* of disaster event-related learning processes but leave a large gap in terms of what a 'thorough and careful investigation' looks like and how change can be linked to the findings from this investigation. Some indications are offered like mobilizing groups and increasing agenda attention but *how* these are done and their linkages to these outcomes is unclear.

Lessons learned reports, then, are documents which often present 'fantasy learning' (Birkland, 2009). Their functioning as accountability documents is a function of their capacity to apportion blame to those who are perceived to have failed in the crisis (Tetlock, 1985). This function of apportioning blame is often politically-sensitive (Moynihan, 2009) and socially pressured (Gephart et al., 1990). Further to this, the reports are often also performative of the kinds of learning that are expected from them. Birkland (2009) notes

Figure 2.3: An ideal model of event-related policy change
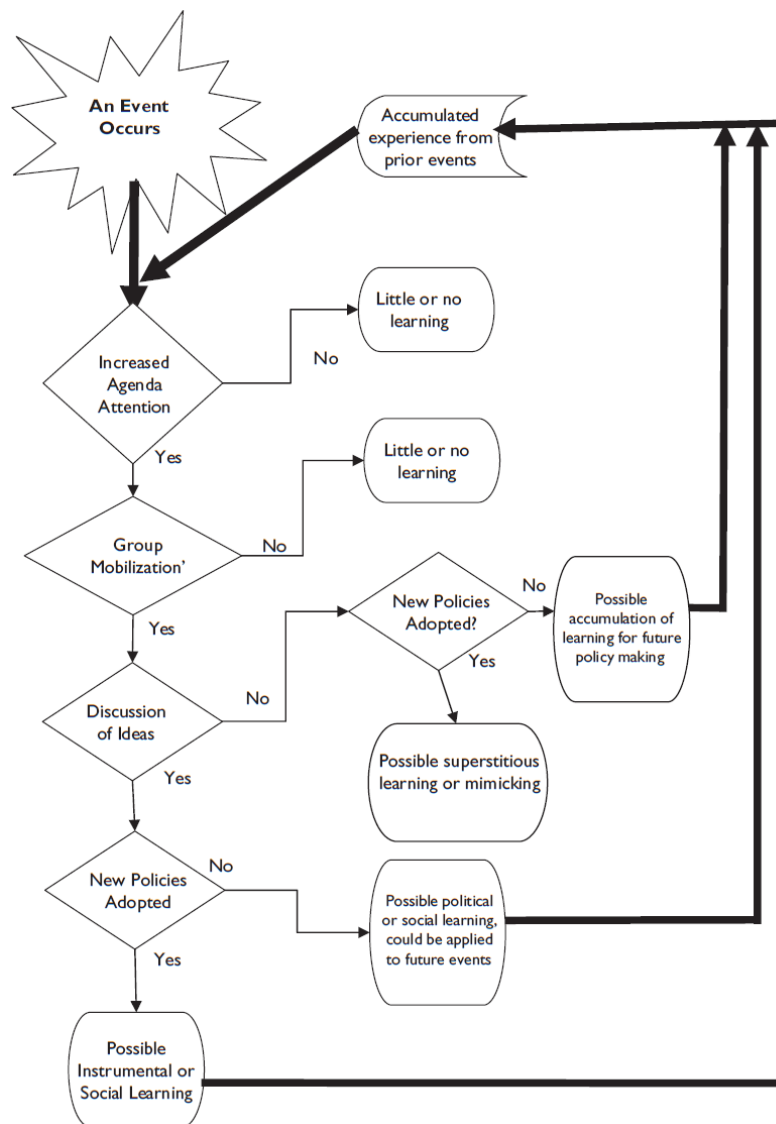
Source: (Birkland, 2009, p.151)

their rhetorical purpose, while Brown (2000); Brown and Jones (2000); Brown (2004) notes their performance of authority, provenance and comprehensiveness.

These investigations, however, are limited in their explorations of the knowledge accumulation or production role that lessons learned reports play. Furthermore, they are limited in their explorations of *process*. These often explore the reports either as objects of study (Birkland, 2009; Brown, 2000, 2004) or as indicators for the processes of sensemaking from crises (Gephart et al., 1990; Colville et al., 2013; Weick et al., 2005; Weick, 1993). The literature search for this thesis found no investigations into the learning *processes* of lessons learned reports.

2.4.2 Sensemaking

In order to understand the processes by which so-called 'lessons learned' reports are produced, this thesis uses a sensemaking perspective to analyse the individual and group processes of knowledge codification. The rationales for utilising the sensemaking perspective as a lens through which to examine the report construction process are two-fold. First, the perspective provides a micro-view of macro-phenomena, exploring the individual and group processes which underpin the broader social order (Gephart et al., 1990). Given that this thesis is concerned with the manner in which micro-level knowledge codification produces a macro-level effect on knowledge accumulation, this perspective is highly relevant.

Second, the perspective's applicability in the context of emergencies is already well-established: Weick and Roberts (1993) observed "collective mind" on flight-decks on aircraft carriers, Weick (1993) assessed sensemaking's link to organization used the context of the Mann Gulch disaster, and Colville et al. (2013) explored sensemaking in counter-terrorism response. The perspective has also been used to examine the sense-giving and authority construction of individual reports (Brown, 2000, 2004) and as such has already been applied in similar contexts. The relevance here, however, is not the development of the sensemaking perspective but knowledge accumulation in crises more broadly. This section proceeds by first detailing the sensemaking perspective and its development. The section will then draw out conceptual tools for analysis of the individual cases.

Sensemaking, as defined by (Brown, 2015, p.266), "refers generally to those processes by which people seek to plausibly understand ambiguous, equivocal or confusing issues or events". This conceptualisation is inherently constructivist in philosophy; Weick (1995), in his original construction, notes that sense is *made* and not an interpretation of events, implying that there is not a closed set of interpretations from which to choose, but an infinite range of senses which can be made from the events experienced. For the present purpose, this means that there exist multiple, contestable, and equivocal perspectives (Brown, 2015; Colville et al., 2013) through which the events of the 2013-2016 Ebola Crisis can be viewed. In turn, this would indicate multiple, contestable, and equivocal 'lessons' that can be codified from a crisis.

Sensemaking, however, is not just a method for understanding the world, Weick (1993) notes that "the basic idea of sensemaking is that reality is an ongoing accomplishment that emerges from efforts to create order and make retrospective sense of what occurs" (Weick, 1993, p.635). Once sense is made of the world, that sense is imposed back onto

the world and future events are understood through the existing sense made from previous experience. As Maitlis (2005) notes "sensemaking thus both precedes decision making and follows it" (Maitlis, 2005, p.21). Sensemaking, then, is a process not only for understanding the world but also for interacting with it.

Sensemaking is also used in Neuroscience to refer to the way in which sensory inputs are passed through various pathways of interpretation based upon pre-existing neural connections (Klein et al., 2006a,b). As the senses experience the world, the interpretation of those sensory inputs (including even which inputs get sensed at all) occurs through integration with cognitive schemes based upon previous experience and knowledge (Klein et al., 2006a). In effect, "our brains do not passively sense the world - they knit it from moment to moment by braiding and knotting remembered encounters from the past" (Francis, 2018, p.220).

Both Neuroscience and Organizational Studies, then, utilise 'sensemaking' to mean the same processes but at different levels. For neuroscience, the individual is constantly sensing the world and previous experiences shapes how the world is sensed and the ways in which those senses are interpreted. For organization studies, sensemaking is a collection of individual cognitive and active processes which constitute the making of organizations and their behaviours.

Additionally, this conceptualization of an ongoing attempt to understand and make reality overlaps well with Argyris and Schön (1978) and their 'Theory of Action' perspective. This perspective, as seen above, notes that actions within an organization follow a particular understanding of *why* that action is taking place (Argyris and Schön, 1978). Similarly, the activities of individuals and groups under a sensemaking perspective are underpinned by the sense that has been made of the world through previous activity (Weick and Roberts, 1993).

Furthermore, sensemaking is also *cyclical* in nature (Colville et al., 2013). These recursive processes of understanding the world and creating it according to that understanding, individuals' sensemaking abstracts knowledge (or understandings) and tests them with new experiences. This links sensemaking with our understanding of knowledge accumulation as a *cyclical* process and shows how people act upon their understandings of the world (Argyris and Schön, 1978).

Weick (1995) also noted that sensemaking is linked to organizing: groups must collectively make sense of the world in order to act upon it as a cohesive group. As put by Maitlis; "organizational sensemaking is a fundamentally social process: organization

members interpret their environment in and through interactions with others, constructing accounts that allow them to comprehend the world and act collectively" (Maitlis, 2005, p.21). In order to act collectively, a mutual understanding of the world and roles within it is necessary.[5].

From a process perspective, sensemaking is seen to act in a recursive cycle of noticing cues, interpreting them, and acting upon the frames produced (Weick, 1995). Put a different way, sensemaking is constituted by a cycle between conceptualising the world and enacting it. This cyclical, ongoing nature of sensemaking overlaps with both the learning view of Kolb (1984) and the knowledge accumulation cycle proposed by Argote and Miron-spektor (2011). Sensemaking, then, is analogous to learning in that it is an ongoing process constituted by shaping and reshaping conceptualizations of the world in light of new and continuous experiences.

Lessons learned reports, in these terms, *make sense* of crises and attempt to understand *'what happened'* to draw lessons for policy change (Gephart et al., 1990; Birkland, 2009). While they can perform the theorised action of transferring knowledge across person and place, these reports often are a more performative tool for re-establishing the authority of social institutions (Gephart et al., 1990) and determining a narrative or understanding of the events which took place (Brown, 2000, 2004). These reports, as we saw with Birkland (2009), is part of event-related learning by being part of a 'careful and thorough investigation' which results in related policy change.

2.5 Summary

We began this chapter with three questions. First, how does knowledge accumulation operate broadly in non-crisis contexts? Next, how does knowledge accumulation change when it comes to crisis contexts? And finally, how do lessons learned reports accumulate knowledge from crises?

First, we found that a distinction between knowledge and learning was a useful place to start. We saw how learning can be conceptualised as a process from which knowledge, an artefact, is produced. We saw that there is an important distinction between codified knowledge (that which is explicable and articulated) and tacit knowledge (that which cannot be spoken aloud of written down, only demonstrated or practised). We also saw how tacit and codified knowledge can be transformed from one to another through processes

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[5]It must be noted that although a mutual understanding of the world is necessary for collective actions, individuals can and do hold competing and equivocal understandings *simultaneously* (Maitlis, 2005)

of socialisation, externalisation, combination, and integration.

We saw how knowledge accumulation operates in continuous cycles. These cycles were demonstrated to be a dialectic interaction between experience and knowledge. First experiences are abstracted and developed into new cognitive schemes and understandings of the world, then those understandings are experimented with and used in new experiences to test their validity. This process of cycling between experience and knowledge is how knowledge accumulates - each time a new task experience is had, new knowledge is combined with the previous knowledge.

In normal situations we can also see how knowledge accumulation is not just an epistemic process but a social and political one. We saw how knowledge accumulation is often constrained to certain pathways through particular paradigms. This constraining to pathways is advantageous because it allows for a deeper exploration of particular phenomena within the paradigm but excludes phenomena not included within the paradigm. The process of paradigm construction is inherently political and social, generally relying on politics of authority and evidence.

Second, we saw how crises differ from these normal situations and thus knowledge accumulation operates differently. We saw that crises are different to normal situations because they are extra-ordinary contexts that often have high consequences and limited time for decision-making. Furthermore, they are situations in which the normal ways of acting or thinking are insufficient. In effect, a crisis is qualitatively different to normal contexts because it is so not-normal.

This non-normal aspect of crisis limits the continuous capacity for knowledge accumulation in three ways. The rarity of these events means that the same people rarely respond to the same event twice, meaning people are often responding to an event for the first time, limiting knowledge accumulation. Second, the heterogeneity of the events means that no two events are necessarily the same, making lessons from one event difficult for a person to apply in the next. Third, the complexity of events means that attributing a root cause or deriving simple linear lessons is difficult, if not impossible, in the first place.

We saw, however, that codifying knowledge allows us to ameliorate these barriers thanks to three processes. First, relocating codified knowledge allows us to move some knowledge from one place, person, or time, to another's - thus overcoming the rarity limitation. Second, combination allows us to take codified knowledge from multiple heterogeneous events and combined them to create general rules and heuristics for use in multiple types of crisis. Finally, synthesization allows for the complexity of the events to

be represented and compiled into a single codified document which presents lessons from an event alongside the rationalisations for those lessons.

Third, we moved on to looking at the so-called lessons learned reports which form the object of study for this thesis. We saw how they are intended for accountability purposes to apportion blame, and that this is often a function which is political in nature. We also saw how they perform a social role in establishing an authoritative account of 'what happened' and allows for lessons to be derived as well as institutions to be re-legitimated. Finally, we saw that sensemaking is an essential component of lessons learned reports which allows for a culture to both learn from and socially accept a crisis.

As we saw from Birkland (2009), these lessons learned documents form part of an ideal-type event-related learning cycle. However, these reports are often either not performed or not 'thorough and careful' and infrequently lead to connected policy change. In this conceptualisation, Birkland (2009) notes that a 'thorough and careful' investigation, increased agenda attention, and group mobilization form the pattern of activities which give rise to experience accumulation. Birkland (2009), however, does not note *how* a thorough and careful investigation is conducted or how this increases agenda attention or mobilises groups.

Expanding this cyclical concept across time we can see how a paradigm might begin to evolved through various cycles in successive outbreaks thanks to incomplete or weak learning in each instance, Figure 2.4 shows this graphically. If we imagine three outbreaks which occur in succession in different contexts, with different people, and with a number of years between them we can establish a timeline for accumulation. In each of these outbreaks, various different knowledges are assembled on a micro-scale through different learning processes. In Outbreak 1, therefore, we see four knowledge cycles which represent four different knowledges produced and used within the outbreak.

As we move to Outbreak 2 we see that only two previous knowledges have accumulated. The loss of other knowledges could be due to inapplicability of lessons, a loss of the people holding knowledge, or an inability to fully describe or explain such knowledge. We can also see that, due to the heterogeneity of events, that a new knowledge has been produced and used that was not usable or present in outbreak 1.

Once we move to outbreak 3 we are left with just one knowledge. Through a combination of two knowledges from outbreak 1 and the loss of the other knowledge from outbreak 2, we have reached an outbreak with a one-knowledge solution. This is a drastic and abstract example but it demonstrates a line of logic: knowledge accumulation can be

Figure 2.4: Mapping the knowledge accumulation cycle over time in discontinuous outbreaks.
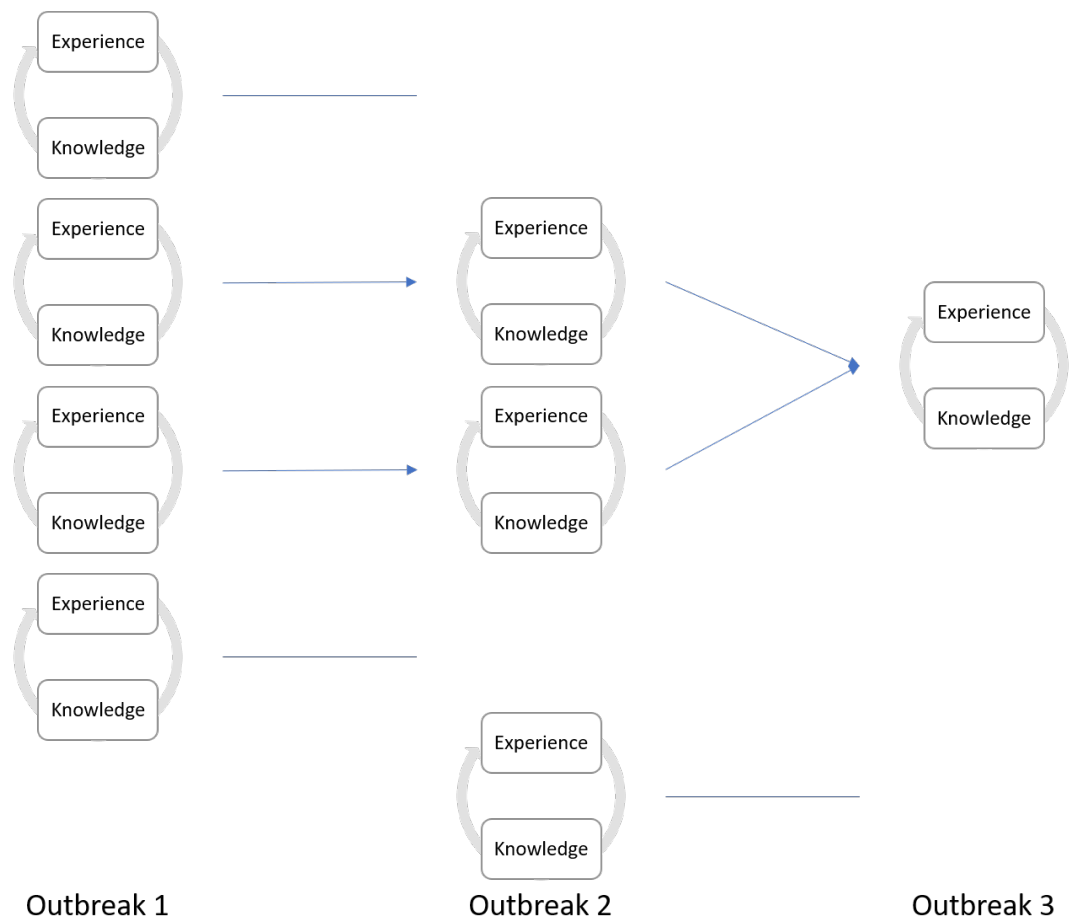
Source: Author's elaboration and expansion on Kolb (1984)

viewed through an *evolutionary* lens whereby the 'fitness' of a knowledge is measured by its transferability from one outbreak to the next through complete accumulation cycles. It is this evolutionary lens that this thesis will bring to bear upon the 2013-2016 Ebola Crisis and its knowledge accumulation.

Chapter 3

Research Design

3.1 Overview

The previous chapter detailed the theoretical underpinning for this thesis and explained the conceptual framework for the study. The thesis uses an embedded-case method to examine the knowledge production processes during the 2013-2016 Ebola Crisis. In looking at this case, the study focused down on two examples of expert panel reports: the Ebola Interim Assessment Panel and the Harvard-London School of Hygiene and Tropical Medicine Independent Panel on the Global Response to Ebola. This thesis used two sources of data to analyse these cases: document data and interview data.

This chapter expands on the research design, first by looking at the embedded case method employed and the rationale for case selection. Next the chapter explains the document sampling frames and collection, then expands on the analysis and use of lesson co-occurrence networks as a method for determining how central a lesson is to the broader case. The chapter then looks at the interview data sampling method for the two interviewee samples, motivating the interview design, and explaining interview analysis. The chapter summarises with a note on the analytical interaction between the broad case and the two specific cases.

3.2 Case Study Method

The approach used in this thesis is an embedded-case method. In the context of the macro-case of the 2013-2016 Ebola Crisis, the thesis looks at the knowledge accumulation processes in the case of two expert panel reports produced during the outbreak: the Ebola Interim Assessment Panel and the Harvard-LSHTM Independent Panel on the Global

Response to Ebola. This section will first explain the rationale behind using an embedded-case approach, then the section will rationalise why these particular cases were selected.

3.2.1 Approach

This project uses a case-study method to assess and analyse the production of codified knowledge from to the response to the Ebola Crisis (2013-2016). Case studies form an intrinsic basis for social science research (Byrne and Ragin, 2009). As Ragin and Becker (1992) note, a case is more accurately characterised as a complex system. In the analytical frame of the researcher, the equivocality and contextual embeddedness is reduced into a set of theories about causal mechanisms which dynamically interact. In short, case studies offer multiple opportunities for theorising whilst retaining thick description to explain causal mechanisms (Flyvbjerg, 2006). Although case studies do not generate universal laws, social research does not often aim to do so. Case study research, therefore, can allow for generalisability, but with acknowledged constraints (Byrne and Ragin, 2009).

Case study analysis has limitations: possible bias in case selection, possible lack of representativeness, and difficulty in evaluating the *extent* to which particular effects are determined by situations (George and Bennett, 2005). However, the aim of the present study is to analyse causal effects and processes, an aim to which case study research is particularly suited. This is particularly prescient for this thesis given the complex interactions within and between cases.

This thesis also makes use of the multi-level nature of case studies. There are various levels at which one can find cases. For example, the case taken in this thesis is the 2013-2016 Ebola Crisis, however this thesis does not explore the outbreak in its entirety. Instead, the thesis begins with an examination of the variety of lessons that have been codified from the Ebola Crisis. The thesis then moves on to detail the context, processes, and outcomes of two expert panels which produced and codified knowledge from the outbreak. The utility of case methods here is in the capacity to maintain external validity for the micro-level cases through the boundaries provided by the macro-case (the 2013-2016 Ebola Crisis) (Gibbert and Ruigrok, 2010). Effectively, by looking at two cases within a broader case, it is possible to generalise the argument to the broader case context (Byrne and Ragin, 2009; Ragin and Becker, 1992; George and Bennett, 2005).

3.2.2 Case Study Selection

Case selection requires rationales for both the embedding case and the embedded cases. This section will detail the reasoning behind selecting the 2013-2016 Ebola Crisis as the broad case; exploring the recency of the crisis and its paradigm-breaking nature. The section will then move on to examine the rationales behind choosing the Ebola Interim Assessment Panel and the Harvard-LSHTM Independent Panel on the Global Response to Ebola. The section will explore how the reports both fit into standard narratives despite having different contexts and panel compositions thus revealing of how *different processes* entrench the same narratives and recommendations.

Broad Case: The 2013-2016 Ebola Crisis

The choosing of the 2013-2016 Ebola Crisis as the case for this thesis was based upon two rationales. The first is the recency of the crisis ensuring that interviewees remember the rationales and processes used to reach consensus conclusions. The second is that the nature of the crisis breaks the three central tenets of outbreak response established in the Global Health Security paradigm.

First, looking practically at studying the *process* of knowledge accumulation, interviewees would need to have a recollection of events in a great level of detail. While this would be possible for some interviewees in events past (for example, the 2003 SARS pandemic or the 2009 H1N1 Influnza A pandemic), having a set of interviewees for whom these experiences were "fresh" and as recent as 1-2 years prior enabled a much deeper recollection than for other outbreaks. The most recent outbreak therefore is the most appropriate case for this investigation.

Additionally, the recency of the Ebola Crisis allowed competing perspectives to be much more easily captured. Over time stories are told and retold, narratives are shared more widely, and prior experiences are transformed through the lens of new experiences (Weick, 1988; Colville et al., 2013). The further from the time of the outbreak a research setting is, then, increases the likelihood that experiences will have been transformed through new experiences and decreases the likelihood of data reflecting the experience of the case being studied. In effect, by studying the Ebola Crisis, the data collected is more likely to reflect knowledge produced during the Ebola Crisis and not knowledge from more recent epidemics.

Secondly the case of the 2013-2016 Ebola Crisis is a crucial *empirical* case. Chapter 4 will demonstrate the rise and construction of a Global Health Security paradigm (GHSp)

which has come to underpin conceptualisations of outbreak response. This paradigm contains three central tenets for response: disease surveillance for rapid response, an empowered and authoritative WHO, and the rapid production and disbursement of biomedical countermeasures. The 2013-2016 Ebola Crisis was a case which demonstrates failures on all three central tenets: surveillance was not rapid, WHO was weak and not authoritative, and biomedical countermeasures were absent while clinical trials were plagued with ethical and practical barriers. This absence of the central tenets represents a significant challenge to the dominant paradigm of disease outbreak response and thus justifies an exploration of how this drastic challenge shapes knowledge accumulation.

The 2013-2016 Ebola Crisis has been chosen as the broad research case because of its recency and its challenge to the dominant paradigm. Recency allows for a "fresh" perspective, shaped by the events of the case itself and not viewed through the lens of other, more recent cases. The challenge to the dominant paradigm allows us to characterise this case as crucial; if the paradigm's assumptions are not reconsidered here, then less crucial cases can be assumed to not be reconsidered too.

Embedded Case Selection: The Ebola Interim Assessment Panel & the Harvard-LSHTM Independent Panel on the Global Response to Ebola

The rationale for choosing these two cases was born of a recognition that they are similar and different in important ways. The two cases were both high profile, systemic scope, high impact panel processes purporting to detail 'lessons learned from Ebola'. These cases, however, are different in their *processes*: while the Interim Assessment Panel report was produced by a small, highly qualified team of experienced policymakers in an institutional setting, the Harvard-LSHTM Independent panel's report was produced by a large team of highly expert academics in a setting designed with the express purpose of being 'independent'. These two similar results from different processes allows us to investigate how codification and sensemaking processes produce particular results.

Embedded Case 1: The Ebola Interim Assessment Panel (EIAP) was composed of six individuals with policymaking and academic backgrounds in global health and humanitarianism. The panel was established by a Special Session of the Executive Board of the World Health Organization which mandated "the Director-General to commission an interim assessment, by a panel of outside independent experts, on all aspects of WHO's response, from the onset of the current outbreak ... to be presented at the Sixty-Eighth World Health Assembly" (WHO Executive Board, 2015, p.12). This is not only a highly institu-

tionalised setting within which to conduct an exercise in accountability, but the mandate only allocated four months for the full exercise from panel appointment to presentation. As we shall see later, this institutional setting and short time-frame constrained what could be done and determined the results.

Embedded Case 2: The Harvard-LSHTM Independent Panel on the Global Response to Ebola (HLIP), on the other hand, was composed of 22 individuals from civil society and academic backgrounds in global health and humanitarianism. The panel was organized by Suerie Moon, Julio Frenk, and Ashish Jha, and funded by the Rockerfeller Foundation. This non-governmental setting, as well as an academic/civil society composition of the panel, gives it the 'independent' in its name. Additionally, the establishing of the panel in September of 2014 and the final publication in November of 2015 gave the panel over a year to produce their report. This 'independent' setting and long time period for consideration gives a very large divergence between the processes for the EIAP and the HLIP. Despite these divergences, however, the lessons contained within the reports are strikingly similar.

A number of efforts have attempted collect and review the vast swathe of 'lessons' from the 2013-2016 Ebola Crisis. Some examples include: WHO has produced its own list of approximately 40 reports and papers (World Health Organization, 2016a); the authors of some of these reports came together to review 7 reports in a commentary in the *British Medical Journal* (Moon et al., 2017); and other authors of some of these reports came together to review 4 'global commissions' in a policy forum contribution for *PLoS Medicine* (Gostin et al., 2016). Each of these analysis efforts noted the commonality in the lessons across all of these efforts. This is particularly surprising given that these reviews highlight the diverse compositions and contexts of the panels (World Health Organization, 2016a; Moon et al., 2017; Gostin et al., 2016).

In each of these reviews, four panels consistently appear: the Ebola Interim Assessment Panel (World Health Organization, 2015e), the Harvard-London School of Hygiene and Tropical Medicine Independent Panel (Moon et al., 2015), the US National Academy of Medicine's Commission on a Global Health Risk Framework for the Future (Sands et al., 2016), and the UN Secretary-General's High-Level Panel on the Global Response to Health Crises (Kikwete et al., 2016). Given the prominence of these four reports, the representativeness of their lessons (World Health Organization, 2016a; Moon et al., 2017; Gostin et al., 2016), and their varying contexts and compositions, these would form a good sample for exploring *processes* of knowledge accumulation in the panels.

In deciding to explore the formation of lessons from the 2013-2016 Ebola Crisis, it was

Figure 3.1: Seven prominent global reports reviewing the 2013-2016 Ebola Crisis. The four panels most consistently appearing are highlighted and the two panels chosen for this thesis are outlined.

Publication date	Title	Convener (chair)	Scope and areas of emphasis
Commissioned by WHO			
July 2015	Ebola interim assessment panel	WHO (Barbara Stocking)	WHO's performance, focus on operational capacity, organisational culture, financing, communications, role in broader humanitarian systems
November 2015; January 2016	Advisory group on reform of WHO's work in outbreaks and emergencies	WHO director general (David Nabarro)	WHO core mandate and critical functions, focus on reform of WHO's work in outbreaks and emergencies
May 2016	Report of the review committee on the role of the IHR(2005) in the Ebola outbreak and response	WHO director general (Didier Houssin)	Recommendations for improved implementation of IHR, based on assessment of their effectiveness in Ebola outbreak and the status of implementation of recommendations from the previous review committee
Commissioned by others			
November 2015	Will Ebola change the game? Ten essential reforms for the next pandemic	Harvard / LSHTM (Peter Piot)	Global system performance, with focus on IHR compliance, knowledge management, R&D, governance of global system, WHO reform
January 2016	The neglected dimension of global security: a framework to counter infectious disease crises	US National Academy of Medicine (Peter Sands)	Recommendations for the future based on review of past outbreak emergencies, with focus on the economic case for investing pandemic preparedness, national core capacities, WHO operational capacity, and R&D
January 2016	World Health Organization and emergency health: if not now, when?	Lead author: Francesco Checchi	Recommendations for WHO, based on review of past responses to health emergencies, with a focus on six stand out problems
January 2016 (panel report); April 2016 (UN secretary general's commentary)	Protecting humanity from future health crises: report of the high-level panel on the global response to health crises	UN secretary general (Jakaya Kikwete)	Recommendations to strengthen national and international systems to prevent and effectively respond to future health crises, with a focus on national health systems, WHO and UN systems, development aid, R&D, financing, UN follow-up

IHR=International Health Regulations; LSHTM=London School of Hygiene and Tropical Medicine

Source: Author's elaboration on Table 1 of (Moon et al., 2017, p.6)

important to analyse panels whose scope was to examine the crisis itself. The rationale for this is that these are the efforts which the question of 'what happened?' is most prescient and therefore sensemaking efforts should be central to the knowledge codification process (Kaliner, 2013). Figure 3.1 shows a summary of panels and scopes, highlighting the four prominent reports and the two embedded cases for this thesis. The two panels chosen as case studies are the two which are scoped only around the Ebola Crisis (the EIAP and HLIP), not the two panels whose scope is much more far-ranging recommendations for the future based on multiple past outbreaks.

This similarity between the sets of recommendations and the divergence in report processes is the rationale for studying these cases. The two embedded cases were chosen for their prominence and scope. This thesis focuses on these two cases to tease apart why the different processes delivered such similar results. To do so we focus on the lessons learned codified in a diversity of documents to explore the possible lessons that could have been codified by each panel, then the two cases are examined in detail to find reasons why they are so similar. The next sections discuss the document and interview data collection and analysis in-turn.

3.3   Document Data

As described, the thesis operates on two data types: documents producing codified knowledge from the Ebola Crisis and semi-structured. This section describes the rationale and process for the collection and analysis of the documentary data.

In order to understand *how* knowledge is accumulated, it must first be understood *what* knowledge was produced. As Chapter 4 will demonstrate, learning from disease outbreak responses has been guided by a particular Global Health Security Paradigm, established over the past 30 years. This paradigm concerns the use of surveillance for rapid response, the centralisation of authority within WHO, and the use of rapid production of medical countermeasures (vaccines, therapeutics, and diagnostic technologies). The collection and analysis of documentary data was intended to depict the diversity of perspectives in knowledge produced from the Ebola Crisis (2013-2016). Additionally, the method aimed to recognise what types of lessons were learned most frequently and in what depth they are discussed. The central rationale, then, for this method is understanding the full scope of lessons from the Ebola Crisis and to what extent they follow this Global Health Security Paradigm.

3.3.1   Document Collection

The collection of documents which present codified knowledge from the Ebola Crisis proceeded in three samples. The first, an academic literature sample, collected by querying the Scopus database is a sample of documents produced in academic journals aimed to gain a look at the *academic* analysis of the Ebola Crisis. Second, a grey literature sample, collected from the archives of various non-academic publications aimed to understand how *practitioners* understood the Ebola Crisis and what lessons were being drawn. Finally, a policy sample collected from documents directly cited in policy-making aimed to understand the lessons which have fed into policy decision-making. These samples yielded a total of 267 items: 161 (65%) in the academic sample, 62 (23%) in the grey sample, and 34 (13%) in the policy sample. This sampling strategy aimed to gain an insight into the breadth of possible 'lessons learned' from the Ebola Crisis, and to understand how these lessons fit into the Global Health Security Paradigm.

Academic Document Sample

The first sample aimed to gain a systematic view of the academic literature. The primary reason for this is that many of the authors of the two reports examined in this thesis are

academics. These authors, then, are embedded in their own disciplinary communities as well as their institutional context. Sampling the academic literature, then, gives a better picture as to what lessons the academic community (of various disciplines) are drawing and codifying.

To sample the academic literature, we first queried Scopus for any item containing the word 'Ebola' in its title, abstract, or keywords published after 2013 (most recent query performed on 09/08/2017). This yielded 6121 documents whose metadata were exported for sorting. The titles and abstracts of these were then used to sort documents manually, looking in the title and abstracts for indicators of papers which likely contained functional lessons learned. This generally included documents where the abstracts or titles included the phrase 'lessons learned' or 'lessons' or 'implications for policy/practise.' This process led to a sample of 161 documents which were then analysed in more depth.

Sampling the academic literature presents three limitations: First, the delay between submission and publication of an academic paper reduces the likelihood that a paper has been captured by the time frame. A news feature in *Nature* (Powell, 2016) details that the median journal review time (time from submission to acceptance) is approximately 100 days, and that *PloS ONE* review times had increased from 37 days to 125 days over a ten year period. In addition to this, there is also the delay between publication and the paper being archived on Scopus, further reducing the likelihood that more recent works will be captured by the search. However, the elapsed time between the end of the outbreak (January 2016) and the most recent search (August 2017) is 573 days, and the elapsed time between the PHEIC declaration (August 2015) and the most recent search (August 2017) is 732 days. Both of these, even accounting for an average 100 days of review and editing (Powell, 2016), would give authors more than a year to prepare manuscripts for submission. Thus, this thesis makes the case that the academic sample used has sufficient coverage from which to draw conclusions of the knowledge the academic community/communities have codified.

Second, is a western content bias in the Scopus database. The Scopus Content Coverage Guide (Scopus, 2017) reveals that the regional coverage for North America and Western Europe is 'more than 6,000' journals and 'more than 11,000' journals, respectively. Regional coverage for the Middle East and Africa is 'more than 750' journals, revealing a large bias towards North American and Western European content. In order to reduce this bias, the database 'African Journals Online (AJOL)' was queried. AJOL is a non-profit whose aim is to disseminate scholarly work from across the African continent. Using the

same search strategy as for Scopus, no papers were found which were not also found in the Scopus search. While this does not ameliorate the bias, it does provide some evidence that the Scopus database coverage is suitable for this thesis' purposes.

Finally, there are barriers to publication which on the one hand serve to maintain academic work's robustness and validity, but on the other serve to value some knowledges over others or to value certain authors over others. One study of medical publishing found that, in a sample of 1191 researchers at the Paris Hospitals Board, the largest barriers to publishing included a lack of time to write and submit, limited English writing skills (particularly pertinent given the dominance of english-language publishing in academia), lack of critical editing capacity, and a lack of funding support for editing or publication fees (Duracinsky et al., 2017). These barriers to practitioner publication in academic journal limits this academic sample's likelihood of accurately representing the breadth of knowledge produced from the outbreak. This was, however, offset by further the next two further sampling strategies.

Responder Document Sample

The aim of this sample was to examine the knowledge codified in non-academic publications. The rationale behind this was to be more inclusive of responder knowledge in the analysis. Responder knowledge was important for the analysis because, while many responders are also academics, that is not true of all responders. Therefore, including non-academic responders in the sample widens the scope of possible lessons that can be identified. However, the barriers to academic publishing noted above (limited academic English writing skills, lack of time and resources, and lack of critical editing capacity) limited the *academic* sample's capacity to include *responder* knowledge.

The responder document sample, then, is a sample of non-academic publications codifying lessons from the 2013-2016 Ebola Crisis. To gain a view of *responder* lessons, then, a number of non-academic, responder-oriented publications were identified which would provide codified lessons from practitioners. Publications were: the Bulletin of the World Health Organization, CBRNe World, Foreign Affairs, Foreign Policy, the CDC's Morbidity and Mortality Weekly Report, and the Humanitarian Practise Network's Humanitarian Exchange. Each of these publications was chosen for their operational/ response focus, each providing insights aimed at professions in humanitarian or global health responses. These publications' archives were then searched for documents which refer to the 2013 Ebola Crisis.

The decision was taken to exclude government documents from this sample because we consider these as policy documents as opposed to responder documents. As the primary focus of this sample was on the knowledge codified by *responders*, such documents were outside of this sample's scope. Additionally, not every state government involved in the Ebola response has produced a lessons learned document, so this decision was further motivated by the bias that including government reports would have introduced. Although this decision limited the coverage of this responder document sample, it also limited bias and kept the sample focused on *response* lessons.

Policy Sample

This final sample is tailored specifically to gain an understanding of *what documents were informing policy.* This sample was designed to capture the kinds of lessons which were being taken on by policymakers. This sample was provided by The World Health Organization's planning, finance, and accountability group who held an *Information session on studies undertaken in response to the Ebola outbreak* on the 24th of January 2016. As part of the preparation for this, a list of documents were presented as prominent for information.[1] As such, this promotion by WHO, and their subsequent use in policy (many are cited in the reports produced by the oversight body responsible for reforming WHO's own policies on health emergencies (Abdulla et al., 2015; World Health Organization, 2015b)) made the list an excellent resource which represented the documents making an impact on policy.

This sample was limited to this list. The primary rationale was that these documents had a clear and demonstrable direct impact on the policymaking of WHO. In using this list of documents it can therefore be stated that these documents were directly impactful on policy and the lessons that they contain were influential to policymakers in WHO, the central directing and coordinating authority for global health.

Secondarily, scope again becomes a factor due the likelihood that policy documents are limited in scope to evaluating one country or one organization's response to the 2013-2016 Ebola Crisis. This scope would limit the comparability of the lessons across the three samples if the policy sample were to include documents specific to a single organization or country - rather than multinational or multi-organizational analyses. Keeping the policy document sample to these allowed for a consistent comparison across samples whilst maintaining a sample of documents that represents policy impactful lessons.

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[1]http://www.who.int/about/evaluation/extended-list-of-ebola-reviews-may2016.pdf

3.3.2 Document Analysis

The objective of the analysis was to assess whether, on the whole, lessons learned from the 2013 Ebola Crisis followed the pattern established in Chapter 4. The analysis of documents therefore had to make some quantitative measure of the frequency of certain categories of lessons. This allowed us to accurately assess whether the frequency of lessons is representative of the Global Health Security Paradigm: surveillance, WHO authority-building, and rapid production and use of medical countermeasures.

In order to do this, lessons in each of the documents were identified and then clustered together to form categories of related lessons for quantification. The analysis used two methods to ensure that the pattern was consistent; first an inductive clustering model was created using epistemic categories based on the author's own understanding. Second a lesson co-occurrence matrix was built which allowed a network model to be constructed and clusters analysed through network relationships. This section outlines the analysis in more depth beginning with the identification of lessons in the documents, moving to the inductive aggregation of lessons, and finally the clustering and visualisation of lessons using network analysis techniques.

Lesson Identification & Aggregation

To quantify lessons, they had to be identified in a manner which made them not so amorphous as to be abstracted from their original intent but not so distinct from one another as to preclude aggregation. As such, the term *functional lesson* was coined. A functional lesson is *an explicitly stated lesson with a clear intent to recommend action.* This definition was restrictive enough to exclude amorphous lessons but broad enough to capture aggregable lessons.

In practise, the identification of lessons ranged from documents which contained recommendations explicitly, to those which required a more subjective identification of recommendations. For example, the Ebola Interim Assessment Panel's Report contains recommendations in clearly marked boxes, numbered in its executive summary. In cases like these, the identification of lessons were simple; each recommendation is a single lesson.

In other cases, however, the recommendations were embedded in the prose of the document and not highlighted in such a manner. This was more frequently observed in the Grey and Academic samples than the Policy sample. In these cases, the lessons were identified through reading the text and looking for the clear intent to recommend action. For example; "Examination of a patient meeting the case definition of a suspect

case of EVD should not be undertaken other than in an isolation room with the clinician wearing full personal protective equipment" (MacDermott and Herberg, 2017, p.130). This sentence is specific and mandates clear actions to be taken. As such it is coded as a lesson.

Finally, two other codes were created for documents which either were found, upon closer reading, to contain no lessons fitting the criteria (n=71) or to not be about the 2013-2016 Ebola crisis (n=8). These two lesson categories were then discounted from further analysis. In total 54 categories were aggregated from 146 sub-categories.

The identification of lessons, then, created a set of individual lessons from each document which functioned as a proxy for quantification. These lessons, however, also needed to be aggregated into similar empirical categories for quantification. For example, Medical Countermeasures frequently refer to Vaccines, Diagnostics, and Therapeutics (as well as, in some cases, Personal Protective Equipment), as such these three could be aggregated into a broad category concerning Medical Countermeasures. Another example is that engaging survivors and disincentivising bushmeat consumption are some of the contextually specific methods in which communities were engaged and as such fit into the Community Involvement category.

Methodologically, the aggregation of categories followed two main processes; the first used the author's own knowledge of outbreak response and subjective decisions of similarity were used to induct the first coding framework. Second, a co-occurrence network analysis (see next section) revealed particular clusters and coding links which could be aggregated and may have been overlooked. This second process was also subject to the judgements of the author, as the algorithm produces clusters based on select network criteria and so co-occurring lessons may not necessarily be empirically related. Utilising the network clusters as a guide, a second pass of aggregation and re-coding was performed, producing the final results presented in Chapter 5.

Co-occurrence Network Analysis

The creation of a co-occurrence network to visually represent the data here was designed to increase the reliability of the raw counts of lessons and to identify clusters of lessons. In displaying the lessons in a co-occurrence network, it became possible to identify lessons which frequently occur together in the same document. In doing so it was possible to identify whether or not certain lessons were more central to analyses of this outbreak than others, adding further analytical rigour to the question of whether or not the lessons from the 2013-2016 Ebola Crisis follows the Global Health Security Paradigm established in

chapter 4.

The first step in producing a co-occurrence network was to utilise NVivo's built-in co-occurrence matrix function. This function compares each pair of coding categories (a,a; a,b; ... b,a; b,b; ... z,y; z,z) in every document and counts how frequently they occur together in a document. This matrix was then cleaned to harmonise the row and column headings, diagonal (a,a; b,b ... z,z) and duplicates were removed to create a clean matrix. This clean matrix was then imported into the open-source network visualisation software Gephi. This process was repeated for both the aggregated and disaggregated coding sets.

The network visualisation software requires not only the raw data to produce a network but a structural form to use. The structural algorithm used in this case is called 'Force Atlas 2', a layout in which nodes (lessons) repulse one another and edges (co-occurrences) attract one another (Jacomy et al., 2014). In this way, nodes which are joined by edges cluster together and nodes which are not joined by edges are repulsed away from one another. The network visualisations in this thesis also make use of the 'LinLog mode' which accentuates clusters by making the repulsion between two nodes inversely proportional to the log of the distance between them, as opposed to inversely proportional to the direct distance between them. In effect, small changes in the distance between two nodes while they are closer together have a larger effect on the repulsion than changes at large distances. While the attraction force remains proportional to the edge's weight (number of co-occurrences), the large changes at small ranges in node repulsion means that clusters remain tight while nodes outside the cluster are repulsed out further. This then produced the networks seen in section 5.3.1.

The second purpose of these networks, was to compare the differing patters on lessons across each of the different samples. In order to do this two processes were performed across the three samples; the first created a unified, multiplex (multiple, parallel edges) network structure and compare the edges of the three samples, and the second performed the same analysis but on *normalized* edge weights to look for sample size impact on the results. The production of a normalized multiplex network allowed the creation of a constant network structure with filtered edges. In these networks, one can visualise different effects in the different samples more easily.

In creating a multiplex network, the whole network could be produced using the sum of the samples' edges and then each sample's edges visualised individually to view how each sample impacts overall network structure. To create this network, the above steps were taken for each sample individually (aggregated and disaggregated) producing six

individual networks whose edges were then exported from Gephi, compiled into two files (aggregated and disaggregated) with a new 'SourceSample' column and re-imported into Gephi to produce a multiplex graph. The graph was produced in the same way as above and each sample's edges could be filtered out visually in the program. In order to produce a normalized version of the edges, the edge lists were re-exported from the multiplex graphs and each edge was multiplied by a scale factor of $\frac{100}{n}$ where n is the sample size.

3.4 Interview Data

3.4.1 Interview Data Collection

In order to understand how reports are created and used, interviews with 37 report authors and report users were conducted. In total, 14 report-authors and 23 report-users were interviewed. The sampling approaches and interview protocols with respect to each of these two constituencies differed from one another due to their slightly different purposes and will be explored later in this section.

Each interview was semi-structured according to two protocols[2] and designed to elicit answers to a number of key questions and concepts related to codified knowledge production and use. Each interview was audio recorded for future notes and quotes.[3]

Ethical Conduct

As part of the ethical conduct of this research, these recordings were subject to a number of anonymity stipulations:

- Interviewees were given pseudonyms for the purposes of notes, recordings, and in-text citations.

- Notes and recordings from the interviews were available only to the researcher and the lead supervisor, as was the key which detailed who each interviewee was according to pseudonym

- That the notes and recordings would be kept separate to the key

Some interviewees also requested additional dispensations like not being directly quoted (n=2) or not identifying their organization (n=4), and others indicated they were happy

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[2]see descriptions later in this section and full protocols in Appendix A-1 and A-2.

[3]4 report-users' interviews had recording issues and so are not directly cited because quotes could not be verified.

to be quoted by name. Each was assessed case-by-case and negotiated to ensure that interviewees were comfortable with the purpose and process of interviewing, whilst also allowing for optimum use of data given the conditions. In addition to this, each interviewee was sent information on the study, how their data would be used, and the semi-structured questions when approached to give participants knowledge information before providing consent. Participants could also remove their data from the study at any point reasonable prior to the submission of the thesis. Conducting this research was approved by a Cross-School Research Ethics Committee (C-REC) at the University of Sussex, under Reference number ER/JRH35/1.

Fieldwork

The first element of fieldwork was conducted in September of 2015 when the author attended and rapporteured for a Wilton Park[4] dialogue. The dialogue, entitled *The 2014-2015 West African Ebola Outbreak: Lessons for a Response to a deliberate outbreak*,[5] enabled the author to see first-hand a report construction process through discussions and author a report himself. While not directly cited or referenced and certainly not contributory to any data, this dialogue did offer a number of insights into a report-construction process which informed the author's early ideas. Furthermore this dialogue also enabled additional report-users to be recruited for participation in the study.

Official fieldwork in this thesis was conducted in the Summer of 2017. Two weeks were spent in Geneva, Switzerland where interviews were conducted with WHO and humanitarian personnel. Second, two weeks were spent in the United States - the first week in Washington DC, the second in Boston, Massachusetts - where interviews were conducted with report authors and US-based policy-makers. During this visit, a Workshop on Bioterrorism and Biosecurity, held by the Schar School of Public Policy at George Mason University, was attended. This allowed for recruitment of additional report-users as well as interactive engagement of report users in the preliminary results of the document analysis and fieldwork. Additionally, over June and August of 2017, interviews were also conducted at various locations in the United Kingdom including Public Health England, the University of Cambridge, the Institute of Development Studies, and the London School

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[4]Wilton Park is an executive agency of the UK's Foreign and Commonwealth Office which holds frequent dialogues, convening stakeholders and experts for multi-day workshops to explore topics. The culmination of these dialogues is the publication of a report similar to a 'lessons learned' report which outlines a topic and makes recommendations for policy.

[5]Hutton (2016)

of Hygiene and Tropical Medicine.

Finally, a 4-day visit to Accra, Ghana was conducted to present the preliminary findings at the Global Emerging Pathogens and Treatment (GET) Consortium's 3rd Annual Conference on Emerging Infectious Diseases. During this visit, informal discussions with other participants were had which informed some of the analysis and additional participants were recruited.

Report-Authors

Report processes are the central, conceptual locus around which this thesis revolves. As such, report authors were key to understanding the processes employed by the panels and the ways in which the reports were built. The population of authors was sampled first by selecting the two specific-cases (the Ebola Interim Assessment Panel (EIAP) and the Harvard-LSHTM Independent Panel (HLIP)) due to their process divergence and knowledge convergence. This created a sample of 28 total authors who were e-mailed on multiple separate occasions to recruit them to study. Of the 6 authors of the EIAP, 2 were interviewed along with a member of the secretariat to the panel; and of the 22 HLIP authors, 11 were interviewed. This represents an interview rate of approximately 50% which, although not ideal, was enough to reach theoretical saturation including repeating narratives of key events in both report-building processes.

The aim of the interviews for report authors was to elicit the stories of *how* each report was constructed. In particular, the aim was to understand how each of the authors were involved in the sensemaking processes of knowledge creation and learning. As such, questions centred around the actual processes and report-authors' perspectives on them. Appendix A.1 shows the interview protocol for report-authors.

Given the central rationale here was to elicit *process* stories, the protocol follows a linear narrative from report inception through to dissemination. The protocol begins with objectives of the individual and the report, the clarity of purpose, and the intended outcomes. In asking this, it was possible to gain an insight into *why* the report was established and the early stages of people becoming personally involved.

Next, the protocol explores how and why individuals were recruited for the panel. In some cases, this was because the interviewee had been the instigator of the panel and, as such, was asked how they chose other panel members. This question was aimed at obtaining stories of how and why individuals came to be involved in the report panels. This was important because varying rationales and methods of recruitment may: a) impact

the manner in which panel members participate, and b) reflect the general frame of the report in the initial stages.

Next, the protocol hits upon the processes of evidence collection and interpretation. In this section of the protocol, the aim was to collect stories about various aspects of the report itself. In some instances, specific recommendations were mentioned by interviewees and the rationales and negotiations for those were discussed; in others discussions revolved around the writing process and trying to harmonise various notes and comments. This line of questioning revealed some of the insights on evidence collection and narrative consolidation that can be seen in chapters 6 & 7.

The interview protocol then moves on to the individual themselves. This thesis acknowledges that the central reason for panels is for the expertise and knowledge of individuals to be collectivised and transformed into a codified document. Additionally, we recognise that this process is reciprocal; individuals learn from their colleagues as much as their colleagues learn from them. In asking questions of individual knowledge, we begin to understand how individual experience impacts report codification processes.

The protocol moves to the engagement to understand how individuals were involved in the dissemination of the report itself. This is because, assuming diverse perspectives, different individuals will disseminate different aspects of the report. For some, the recommendations surrounding medical countermeasures (for example) will be the important aspects that they discuss in depth, for others it may be the governance challenges. In asking how different individuals were involved in dissemination we can get a sense of how varied the report's impact was or could have been.

The protocol ends on the same question for both users and for authors: "what do you think were the main lessons from the Ebola outbreak?" This question was used to observe the diversity of opinions around the lessons from the Ebola Crisis. Diverse answers to this question do not necessarily guarantee diverse respondents were found, but at least demonstrate a lack of full homogeneity across respondents. In effect, diverse answers to this question (which were found) demonstrate, at least in principle, some diversity in the respondents.

Report-Users

For report users, the aim was to understand how reports featured in the setting of policy, operational, and the academic body of knowledge. Additionally, it was an aim to understand how different epistemic locations/ disciplines received the reports and used them.

Interviews were used for this purpose, rather than surveys, because an understanding of *why* reports were (or weren't) used was also a key aim of the study. As such, semi-structured interviews were a more appropriate methodological tool for our purposes.

Table 3.2 shows a cross-tabulation of these two parameters (epistemic location/ discipline and role of user) and the number of interviewees that fit in each box. Whilst we accept that the lines between each of these parameters is blurry at best, this tabulation allowed us to ensure coverage of various constituencies. In selecting individuals for interview, the

Discipline/ Role	*Clinical/ Public Health*	*Social Science/ Law*	*Disaster/ Crisis Response*
Academia	1	3	1
Policy	3	2	3
Operational	6	1	2

Table 3.1: Number of interviewees who fit into the various categories defined by the parameters of discipline and role. Each interviewee is counted only once into a single box.

process was effectively an idiosyncratic snowball. Having met a number of individuals at Wilton Park and become familiar with prominent authors writing on the subject, as well as key individuals in the actual Ebola Crisis response, the first phase was interviewing these individuals. Then, snowballing from there, aiming to obtain as much of a diversity as possible in the table above.

On the protocol itself, the aim here was to gain an understanding of knowledge and how it is used and produced in their experience and role. In particular, here we try to explore how individuals learn from their experiences, search for useful knowledge, and how they use reports. In the first few questions we explore how the user is involved in outbreak response as well as how they personally learn from their experiences.

The next set of questions is motivated by the concept that knowledge comes in different *types* and from different locations. As proposed by Prencipe and Tell 2001, Nonaka and Takeuchi 1995, and others, knowledge can come in multiple forms depending on the knowledge and the frame of reference (tacit, codified, objective, subjective, personal, trans-active, institutional, etc.), as well as from different locations (personal networks, technical reports, academic papers, organizational repositories, prior education, prior experience, etc.). These questions focus on what types of knowledge are *used* in outbreak response and *who* produces them/ where they are found.

Next we move on to how lessons are internalised in organizations. We conceptualised

from Organizational Learning that knowledge integration into organizations is a *social* process as well as a knowledge process. In this vein, we ask questions about knowledge integration to understand whether some forms or sources of knowledge are privileged over others and why.

Finally we move into the so-called lessons learned reports that are the main focus of this study. How are they used (if at all)? Why are they used? Who is using them?. These questions (along with the distribution of interviewees across the two axes) allows us to analyse the use of reports for various sets of individuals. These questions allow us to understand what it is that makes reports useful and to ask whether report-construction can better fulfil this utility.

In sum, the interview data was aimed towards understanding how and why knowledge is codified in reports. What processes contribute to their production? What uses do they serve? Collecting this data was done through two samples: the first a sample of report authors based on the two case-reports, and the second a stratified sample attempting to cover nine categories based on the two axes of epistemic location and institutional type. The questions were designed to elicit responses based upon the conceptual framework: how is sense made in the production and dissemination of the reports? How is knowledge found and used for disease outbreak responses? These two samples and the two protocols give us a reasonable view as to the how and why knowledge is codified from disease outbreak responses. The next section explores how this data was analysed to answer these questions.

3.4.2 Interview Data Analysis

Interview data in this thesis was analysed in a similar way across the two samples but with slightly different aims. For the report authors the aim was to construct a depiction of the timeline and processes for the two case-reports and the way in which they were built. For report users, the aim was to understand and analyse how and why reports are used to inform disease outbreak response.

In the first instance, for both samples, interview notes were created. These notes were written after the interview and sent to the interviewee for confirmation. The notes were not transcriptions of the interview audio, but did contain verbatim quotes that indicated to interviewees what would be used. This reduced the researcher's time in transcribing but also maintained ethical boundaries, allowing interviewees to remove their quotes.

Once notes were prepared, they were imported into NVivo 11 for analysis. This is where the two samples differ. For the report authors, two passes of analysis were conduc-

ted: the first pass to construct a timeline of events for the reports as well as note some key repetitions and build possible theories; the second pass to analyse report author's discussions of each of these phases and events in turn, theorising how these events could have shaped the final report's narrative and recommendations. This process was broadly focused around two main questions: what events constituted the construction of the report in question, and how could these events have impacted knowledge accumulation via the report?

When analysing for report users, the analysis was much more inductive. In this sample, the central question was simply *how do users find and use knowledge?*. This analysis was performed through highlighting the ways in which users found useful knowledge (whatever form that may take) and exploring dynamics across the nine categories displayed in table 3.2. The main question addressed by this analysis were how does knowledge search and use vary across different institutional settings and epistemic locations? How might this affect the utility and production of codified reports.

Both analysis were thematic in nature, looking at the ways in which interviewees described their experiences both in terms of authoring reports and in terms of using them. Themes were identified by picking out repeatedly emerging commentaries or events using lists of themes/events already seen. This then allowed for aggregating together similar themes and events while exploring emerging theorisations for knowledge processes.

3.5   Summary

This thesis, then, utilises two overlapping phases of data collection and analysis. The first phase focuses on what knowledge had been produced from the Ebola outbreak, using a document analysis to answer this question. The second phase used interview data to understand how reports were produced and used in the 2013-2016 Ebola Crisis. The sum-total of this data analysis was to understand the spectrum of codified knowledge in the Ebola Crisis: what was produced? what was used? how was it produced and used?

Document data were collected in three samples: an academic sample of journal articles, an operational sample constituted of documents aimed at practitioners, a policy samples made up of documents used in policy. Each of the documents in these samples was analysed to identify the recommendations made. These were then analysed to understand what knowledge had been codified from the Ebola Crisis.

Interview data were collected through two samples: report authors were interviewed to understand how reports were constructed, and report users were interviews to understand

how reports were used. These were analysed thematically to answer the questions how is knowledge codified? who is codifying knowledge? who is using codified knowledge? how is codified knowledge used.

Having described the methodology and research design for the thesis, as well as the conceptual framework in the previous chapter, this thesis now moves on to its empirical content. The next chapter focuses on the rise of a paradigm in disease outbreak response. The chapter will explore the discursive underpinnings of this Global Health Security paradigm (GHSp) and then argue for three response pillars: syndromic surveillance for rapid response, an authoritative and empowered WHO, and the rapid research, development, and production of therapeutics, diagnostics, and vaccines. The chapter will set the contextual stage for chapters 5-7 where the cases will be discussed.

Chapter 4

The Global Health Security Paradigm

4.1 Introduction

Thus far, this thesis has introduced the central problem of knowledge in disease outbreak responses, conceptualised knowledge accumulation in disease outbreak responses, and outlined the methodology employed in order to understand how knowledge is accumulated in disease outbreak responses. Next, this thesis aims to introduce what this thesis terms the Global Health Security paradigm (GHSp), a central concept for the remainder of this thesis.

The Global Health Security paradigm is constructed of four separate elements: a globalized and securitized discourse and logic; a surveillance and monitoring regime linked to rapid response; an increasingly empowered and authoritative World Health Organization; and a biomedicalised vision of response where vaccines, rapid diagnostics, and therapeutics are the primary components of an outbreak response. This current paradigm will be demonstrated as dominating knowledge accumulation from disease outbreak response.

The chapter first begins with an outlining of the World Health Organization (WHO) in order to explain the central role that WHO has played in advancing the GHSp and in the vision the paradigm presents. Next, the chapter looks towards the discursive and conceptualising elements and explores the globalized and securitized narrative and logic that underpins the GHSp. Finally, the chapter looks towards the response elements of the GHSp and describes the three pillars of a GHSp vision of disease outbreak response: (i) syndromic surveillance for rapid response, (ii) an empowered and authoritative WHO, and (iii) the rapid production and deployment of biomedical countermeasures.

4.2 The World Health Organization's evolving role in outbreak response

Before the Global Health Security paradigm is demonstrated, an introduction to the WHO and its dynamic role in outbreak response is required. This is because WHO plays a central role in the GHSp vision of outbreak response as well as having occupied a varyingly central role in outbreak responses past. Furthermore, as we shall see in a later section, WHO has played a key role in the dominance of the GHSp, particularly as it began its turn towards Global Health Security as a discourse. It is for these reasons that this section focuses on WHO's historical roots and its role in previous outbreak responses.

The World Health Organization: Organization, History, and Roots

Established on April 7th 1948 (when it's constitution came into force), WHO is an autonomous executive agency of the United Nations (it's parent organization being the UN Economic and Social Council). It operates with a Secretariat (of which the Director-General is head) and is governed by the World Health Assembly (WHA, composed of health ministers from all 194 member states) which elects an Executive Board (34 technical experts elected for a period of three years) to oversee activities and advise the WHA on policy and legislative matters.

WHO's primary objective is "the attainment by all peoples of the highest possible level of health" (World Health Organization, 2014a). The primary objective, Article I of it's constitution, is clarified with a suite of specific functions laid out in Article II - of relevance to this thesis are;

- "(a) to act as the directing and co-ordinating authority on all international health work; ...

- (d) to furnish appropriate technical assistance and, in emergencies, necessary aid upon the request or acceptance of Governments; ...

- (g) to stimulate and advance work to eradicate epidemic, endemic, and other diseases;" (World Health Organization, 2014a)

Though other functions are detailed around non-communicable disease priorities, these three laid the groundwork for WHO's central, coordinating role in disease outbreak response. In essence, "the WHO has a legal obligation to its member states to assist them in responding to, controlling, and ideally eliminating infectious disease" (Kamradt-Scott, 2015, p.21).

The first priorities for WHO reveal a similar trend of communicable disease focus, prioritising "malaria, tuberculosis, venereal disease, maternal and child health, nutrition, and environmental hygiene" (BMJ, 1948, p.302). The priorities of WHO from it's very founding being headed up by a number of communicable disease threats (malaria and tuberculosis are still endemic today, nearly 70 years later) demonstrates that its functions were not merely constitutional but practical.

The focus of WHO on disease has its roots in a historical transition for global health in the early 20th century; population medicine (Kamradt-Scott, 2015). Stemming from Malthus ('Malthusian crises'), the creation of germ theory, and the outbreak of Cholera, 19th Century medicine began a transition from a focus on treating individual maladies to treating publics and environmental determinants of disease (Porter, 1999). Owing to this transition to population medicine, and the numerous outbreaks which occurred in the late-19th and early-20th Centuries, a number of disease outbreaks led to 14 various international sanitary conferences which emphasised the need for state responses to outbreaks of disease and the eventual establishment of the Office Internationale d'Hygiene Publique (OIHP) in 1907 (Kamradt-Scott, 2015).

The 20th Century, however, also saw two World Wars which pushed the war death toll above that of disease for the first time in history (Porter, 1999). In an effort to rebuild populations after the First World War, the League of Nations established a Health Office in 1922 to address the famine and disease that had been caused by the war (Kamradt-Scott, 2015). Both the LNHO and OHIP would have their activities put on hold by the Second World War and would eventually be subsumed by WHO (Sze, 1982).

The post-war period - in particular the San Francisco conference of 1946, at which the idea of an international health organization was proposed - set the stage for the creation of WHO (Sze, 1982). International Organizations were not uncommon in this period (Mitrany, 1945). This stemmed from an acknowledgement of the economic and political instability which appeared in Germany after the First World War, and a theorisation that such instability was the cause of the Second World War (Mitrany, 1945). Utilising International Organizations to help provide states with a measure of stability and social services, the logic assumed that instability would be less likely and thus increase peace and security between states. This rationale engenders WHO with foundational values of health-for-security, an interesting similarity to the health-as-security turn in health governance that we shall see later in this chapter (Kamradt-Scott, 2015).

The World Health Organization from its outset was intended to be a central coordin-

ating and directing authority for outbreak response. In a time when International Organizations were the central solution to political instability and health was moving to a population-based model, the WHO satisfied a desire to protect the health of nations and reduce the risk of trans-national epidemics. The next section examines WHO's setting of priorities and how its authority sits in an uneasy tension between expectations and reality.

WHO's evolving priority-setting

Although WHO's self-imbued authority to respond to disease outbreaks stems from its constitution and identity as an international organization (IO), it by no means has the full authority to act unilaterally. Priority-setting in the WHO is shaped by three factors which constrain its capacity to fully exercise its authority; the governing role of the World Health Assembly, the agenda-shaping power of Private Organizations' voluntary contributions to the WHO budget, and the decreasing proportion of WHO's budget coming from Member States' assessed contributions. This section explores these three factors and how they shape WHO's priorities.

WHO's constitution is the primary source of its self-imbued authority. The function listed in Article 2, part (d) states that WHO is "to furnish appropriate technical assistance and, in emergencies, necessary aid upon the request or acceptance of Government" (World Health Organization, 2014a, p.2). This cements WHO's directive to assist in health emergencies, at least from a constitutional standpoint.

Additionally, the Director-General who receives a measure of *individual* authority in epidemic disease responses. Article 28, part (i) of the WHO constitution allows the Executive Board to give the Director-General "emergency powers in the event of an epidemic *without the need for WHA approval*" (World Health Organization, 2014a, p.9, emphasis added). The article's powers demonstrate not only that outbreaks are a priority for WHO but that the Director-General can suspend the normal functioning of WHO to respond to health emergencies, further demonstrating the intent that WHO be a primary response agency.

The true authority of the WHO, however, stems from the delegated authority given to it by member states of the World Health Assembly (WHA). WHA is made up of health ministers of all countries that are signatories to WHO's constitution. This signing of the constitution delegates a measure of authority on WHO for setting policy on health matters in accordance with the constitution. Furthermore, unlike many other IOs, WHO has the authority to set policy *without* a need for subsequent ratification by states parties (Sze,

1982).

Additional to the WHO's constitutional and delegated authority, the International Health Regulations (IHRs, formerly the International Sanitary Regulations) also imbue large directing authority to WHO. The IHRs are a *legally binding* instrument of international law which commits member states "to prevent, protect against, control and provide public health response to the international spread of disease" (World Health Organization, 2005, p.10). Article 4 of the IHRs (as revised and passed by WHA in 2005) dictates that "each state shall designate or establish a National IHR Focal Point ... [which] shall be *accessible at all times* for communication with the WHO IHR Contact Points" (World Health Organization, 2005, p.11, emphasis added). WHO, via the IHRs, therefore mandates an accessible and *constant* line of communication between States Parties and its headquarters in Geneva, a considerable exercise of authority.

Further to this the IHRs mandate that "States Parties shall utilize existing national structures and resources to meet their core capacity requirements under these regulations, including with regard to: (a) their surveillance, reporting, notification, verification, response and collaboration activities; and (b) their activities concerning designated airports, ports and ground crossings" (World Health Organization, 2005, p.40). Not only do the IHRs grant WHO monitoring authority over States Parties, but it enshrines a set of core capacities that States Parties are required to implement in their own interiors.

WHO's authority, however, is ultimately at the behest of its member states. The members not only provide delegated authority but donate resources for WHO operations, particularly in the event of a health emergency (Kamradt-Scott, 2015). This means that the autonomy of WHO - and the agenda upon which WHO exercises that autonomy - is intimately tied to that of its member states. On the one hand, this provides a mechanism of accountability to prevent WHO from acting unilaterally. On the other, this resource-constraint power is not distributed evenly across member states and so the priorities of WHO can become aligned with those of the most prominent donor states.

In recent years, the control that budgetary constraints has on WHO actions has come to light and affected the response to the Ebola Crisis. Over the almost-decade since the onset of the financial crisis, assessed contributions from member states (mandatory dues paid based on a country's economic output) have been held at 0% nominal growth. WHO therefore "had to cut nearly $1 billion from its proposed two-year budget, which today stands at $3.98 billion" (Fink, 2014). This budget cut of *around 20%* has created deep losses in personnel which cut emergency response personnel by almost two thirds and

left the WHO unit responsible for communicable disease with only 52 regular employees (Fink, 2014). This demonstrates that WHO's authority and adherence to the priorities of member states is not solely down to what WHO *should* or *must* do, but what it *can* do.

As a result of this, voluntary contributions (donations from partners which are not mandatory) have moved from being 25% of WHO's overall budget to 75%. Such a move gives more resource-constraint power not to the member states but to those actors (be they countries of private organizations) who can donate the most amounts to WHO.

In addition to simple resource-constraint power and influence, the monies which come from private organizations often come tied to particular projects or priorities. For example, money from the Global Alliance for Vaccine Innovation or the Global Fund to Fight AIDS, Tuberculosis, and Malaria (GFATM) is generally allocated to either vaccine innovation or AIDS/ TB/ Malaria projects, respectively [1]. This inability to use 75% of its budget for general projects or on its own agenda significantly reduces the WHO's ability to be responsive and flexible in response to emerging needs and shifting WHA priorities.

WHO, then, was established as the central coordinating agency for health matters, particularly outbreak response. The authority of WHO to perform its activities is both self-imbued constitutionally, but also delegated from the member states. WHO's authority, however, is not enough for it to operate; it also needs resources. This resource constraint power exercised by the member states can align it with the priorities of those whose assessed contributions are highest. Additionally, the increased proportion of WHO's budget taken up by private actors with money tied to particular projects severely limits WHO's ability to act responsively or proactively on global priorities. There exists, then, a tension between an expectation of WHO's authority and centrality in outbreak response and a financial reality wherein flexible funds are decreasing and finances are increasingly tied to external interests, limiting WHO capacity to respond to live up to its lofty expectations. What we shall see in the remaining sections is how the WHO's authority as well as the expectations laid upon it have evolved over the last 20 years, from waning confidence in WHO's response to HIV/AIDS to a cementing of new, expanded authority and power for WHO in the revised International Health Regulations.

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[1]In 2017, GAVI voluntarily contributed 133m USD and GFATM voluntarily contributed 16m USD to WHO; for GAVI 122m USD was specified (tied to particular projects) and for GFATM, all 16m USD was specified (World Health Organization, 2018).

4.3   Epidemic disease: A threat to life and livelihoods

Having detailed the history and role of WHO in outbreak responses, we now move onto an explanation of the Global Health Security paradigm. First, this section explores the development of the 'global health security' narrative which has dominated the discourse of 21st Century global health. In particular, this section explores the framing of infectious disease as an existential threat on a global scale and its impact on the logic of disease outbreak response. This narrative is the central framing for the Global Health Security paradigm, and forms the basis of the pathways of knowledge accumulation that are pursued and neglected.

Health security is a particular framing of global health that uses discursive techniques called 'speech acts' to frame health issues as security issues (Buzan et al., 1998). A speech act in this case is a linguistic device in which particular words and phrases have an action beyond their literal meaning. [2] Buzan et al. (1998) put forward securitization as a speech act which takes an issue and elevates it to a security issue, placing it beyond the normal processes of politics and changing the nature of solutions. The speech act is performed by noting a referent object (often the state), an existential threat to that object (in this case a communicable disease outbreak), and exceptional emergency measures which are to be taken in order to ameliorate such a threat. As such, when health became securitized it was removed from a normal political space and gained priority as an emergent threat.

Global health is a different framing that has effectively become an epistemic community over time (Harman and Wenham, 2018; Weisz et al., 2017; Lakoff, 2010). In this conceptualization, the 'global health community' effectively encompasses those actors which are focused on the governance of public health such as WHO and the nation state. The logic of global health, due to this, is inherently national and population oriented. This global (public) health focus, it is argued, has complemented the rise in health security to produce a focus on surveillance and governance mechanisms (Youde, 2012; Harman and Wenham, 2018).

This section explores the development of the Global Health Security framing, beginning with its rise during the HIV/AIDS pandemic and its expansion in the new millennium. The section then explores Global Health Security as a frame for the SARS epidemic in 2003, the revisions to the International Health Regulations in 2005, and Pandemic Influenza (H1N1) in 2009. Finally, the implications of this framing are explored, highlighting the

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[2]The classic example is thanking someone by saying "thank you"; not only does the word have literal meaning but by saying the word one is committing the act to which the word refers.

stigmatisation and 'othering' of the infected, the national security logics of the framing, and the increased use of military and security actors in outbreak responses.

4.3.1 Development of the Global Health Security Framing

Beginnings in HIV/AIDS (1980s-2000s)

A common root for the health security framing is a speech given by US Vice-President Al Gore at the first meeting on the UN Security Council in January of the new millennium. The speech detailed new, non-traditional dimensions of security, including; "The new pandemics, laying waste to whole societies, and the emergence of new strains of old diseases that are horrifyingly resistant to the antibiotics that protected the last three generations" (Gore, 2000). These new dimensions of global security placed health issues squarely in the frame as a threat to security. Additionally, not only was this meeting about HIV/AIDS in Africa as a threat to international peace and security, but it was the first time a health issue had been put before the UN Security Council (Peterson, 2002) - setting a precedent and a clear message that health issues, particularly communicable diseases, had been elevated to an international security threat (Elbe, 2002).

Additional to this, Kofi Annan, then UN Secretary-General, declared January 2000 the 'Month of Africa' because it had "more than its fair share of the world's problems" (United Nations, 2000). Kofi Annan stressed that while AIDS was not a purely African problem "nowhere else had AIDS become a threat to economic, social and political stability on the scale that it now was in Southern and Eastern Africa" (United Nations, 2000). This underlines a frequently cited implication of 'health security' that the security provided is *for* western states *from* the political instability and diseases of poorer states (Rushton, 2011; Davies, 2008; Kamradt-Scott, 2015).

Further, Peter Piot (one of the earliest responders to the original 1974 outbreak of Ebola in Zaire and then Executive Director of UNAIDS) also discussed the political instability created by the AIDS pandemic. Piot stated:

> "war was the instrument of AIDS and rape was an instrument of war. Conflict and the resulting movements of people had fuelled the epidemic. Undoubtedly, however, the epidemic itself caused socio-economic crises which, in turn, threatened political stability." (United Nations, 2000)

Rhetoric as strong as this coming not from a politician but a highly respected scientist brought the authority of science to the health security framing.

The UNSC also passed a resolution (UNSCr 1308) in July 2000 which requested that the Secretary-General order the development of HIV/AIDS knowledge dissemination programs for operations of peacekeeping in Africa. Thus further blurring the lines between health and security, as well as fomenting a discursive tendency to frame health as a security issues. The logic underlying the securitization of health is similar to the health-for-security logic in that communicable diseases can create instability by altering the balance of power between states (or within potential governments, in civil wars), change the course of conflicts through either deliberate use (biological weapons) or endemic disease (like HIV/AIDS in Africa), and erode the legitimacy of social institutions (Peterson, 2002). The difference here is that health is being framed as a security issue in its own right, rather than as a contributing factor to future insecurity.

The HIV/AIDS pandemic was the first health security issue on a global scale. The language of security enshrined the underlying logic: states were under threat from infectious diseases - rich states were threatened by the diseases of poor states (Rushton, 2011; Davies, 2008; Aldis, 2008; McInnes et al., 2012). From this moment onwards, the securitizing actors were the United Nations and scientists: the authority of health security as a framing had risen from a US National Security objective to a *global* security object.

SARS and the Development of Health Security

Beginning in the Guangdong province of China, the SARS outbreak claimed the lives of around 800 people and possibly infected over 8,000 individuals. The virus (SARS-CoV) causes a potentially life-threatening form of pneumonia and was "unremarkable in certain ways among infectious diseases" (Knoebler et al., 2004, p.2). Despite this profile, the outbreak became an important event because of its novelty, its rate of spread, its origin, and the reaction that states had to it.

The first aspect of the outbreak that made it remarkable was its novelty as a virus. The pathogen, SARS-CoV, was previously unknown to science and required the rapid creation of symptomatic, diagnostic, containment, and treatment protocols (Knoebler et al., 2004). Adding this to the emergence of HIV/AIDS (also previously unknown), and the re-emergence of a number of infectious diseases (World Health Organization, 2002), there was a push towards being prepared for any infectious disease rather than a specific set of infectious diseases. This viewpoint of looking for particular arrays of syndromes, rather than specific disease types, came to be known as syndromic surveillance and will be explored in more depth in the next section on the implications of SARS. This was, again, not

wholly down to the outbreak, a critique of the International Health Regulations before the outbreak was its limited scope with respect to infectious diseases (covering only Cholera, Plague, and Yellow Fever) (Velimirovic, 1976), but this limitation was further crystallised through the prism of the SARS outbreak (Davies, 2008).

The second important aspect of SARS is that it spread quickly. This is not to be confused with a high person-to-person transmission rate, but that it spread from China to Canada in four months (Davies, 2008). Such rapid spread of disease was placed squarely on the shoulders of one new change in population mobility; *international travel and trade.* The increasingly interconnected/ globalised world where diseases can spread across the globe in a matter of days, weeks or months became the standard argument for future policymaking with respect to outbreak response.[3] As noted by Davies (2008), 'SARS also demonstrated that relative geographical isolation was not a strong enough defence in the face of an epidemic.' [p.302]. This recognition that outbreaks could now spread across continents rapidly cemented limiting this international spread as a central logic to outbreak response; surveillance and rapid containment became the central tenets of outbreak response.

Third, SARS started in a *developed* country which ran counter to all the previous notions of epidemic disease being for 'poor' countries - epidemics could not be contained to one geographic region. As we saw with the characterization of AIDS as mostly an African problem, there is an underlying logic of containment to health security which had been advocating for ensuring disease was kept where it came from (Rushton, 2011). This often came with the corollary that 'where diseases came from' wasn't the rich, western states enacting health security but the poor, African states (Davies, 2008; Rushton, 2011; Aldis, 2008). SARS directly contradicted this underlying logic - it challenged the assumption that poor countries were where emerging diseases were coming from, and showed that *any* state could begin an epidemic.

Finally, SARS was widely recognised to have caused significant economic harm; one estimate puts the global cost of SARS at US$54 billion (Lee and McKibbin, 2004). This economic damage was largely centred on the countries most affected by the outbreak and, in particular, caused problems for the outbreak response itself when it came to responding in China. Due to the expected travel and trade bans that were likely to be put in place after China confirmed the outbreak, causing large damage to the Chinese economy, the

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[3]For example, it is found in the first page of the Revised International Health Regulations (World Health Organization, 2005) and the opening paragraph of the 2007 World Health Report (World Health Organization, 2007).

Chinese government did not officially notify WHO upon the outset of the outbreak and instead opted to attempt to respond internally (Fidler, 2004). What is interesting here is that WHO was aware of the outbreak but was unable to activate response mechanisms due to the lack of an official notification from within the country. This led to the increasing use of non-state information in surveillance and verification of an outbreak (although official notification must still come from the state, WHO can now act on non-official information) and the inclusion of a "within 24-hours of detection" notification time-limit in the revised IHRs World Health Organization (2005).

As the first major acute disease epidemic of the 21st Century, the SARS outbreak was an important event in shaping global outbreak response. Four particular facets of the outbreak made it important: first, the novelty of the disease made disease-specific regulation obsolete; second, the rapid spread of SARS emphasised the global interconnectedness and that an outbreak in one state can quickly become a problem for others; third, the fact that the epidemic started in a developed country flew in the face of the reigning assumption that poorer states were the location of disease emergence; and fourth, the economic damage (and fear of economic damage) can have real consequences for the response.

Solidifying Health Security: The revised International Health Regulations

Next we turn our attention to the revisions of the International Health Regulations which were officially adopted in 2005. These revisions were an attempt at placing this new discourse of Global Health Security into international law. Further to this, they obligated member states to develop particular core capacities, enshrining not just the logic and assumptions of Global Health Security into law, but the *means by which insecurity would be reduced.*

The International Sanitary Conferences between 1851 and 1938 led not only to the establishment of OIHP and eventually WHO, but the eventual passing of the International Sanitary Regulations (ISRs) in 1951. The regulations enshrined the processes by which states would ensure the sanitation of people and goods entering or exiting their borders. Importantly, the regulations defined a list of six quarantinable diseases for whom special attention and processes were required; Plague, Cholera, Yellow Fever, Smallpox, Typhus, and Relapsing Fever.

The enactment of the ISRs did not last long before they needed to be amended in order to keep up with new scientific developments (Kamradt-Scott, 2015), and so minor amendments were made in 1955, 1956, 1960, and 1963. In 1967, however, the first major re-

visions to the ISRs were circulated by the Expert Committee on International Quarantine for comment by Member States. The subsequent regulations, renamed the International Health Regulations, were passed in 1969 by the 22nd WHA. Amongst other things, these revisions reduced the list of notifiable diseases to just four; cholera, plague, yellow fever, and smallpox (which was removed after the successful eradication Smallpox) (Davies, 2008; Gostin and Katz, 2016). Both the ISRs and IHRs were, however, noted as extensively unimplemented and toothless (Kamradt-Scott, 2015); leading one commentator to question the necessity of IHRs at all (Velimirovic, 1976). The lack of implementation of IHRs led both to a lack of notification for disease outbreaks and excessive measures in restricting travel and trade in the event of an outbreak - commentaries which exist to this day (Fidler, 2005; Kamradt-Scott, 2015; Velimirovic, 1976).

After numerous amendments and the problems with the ISRs persisting through to the IHRs, a number of outbreaks in the early 1990s - cholera in Latin America, 1991; plague in Surat, India, 1994; ebola in Zaire, 1995 - created further evidence that reform to WHO's outbreak policy and the IHRs was needed (Kamradt-Scott, 2015). One key factor here, however, is the emergence of HIV/AIDS and the inability of the IHRs (1969) to deal with its spread because it recognised only three diseases as notifiable and thus additional policy and regulation needed to be created to tackle the epidemic. Additionally, as referred to earlier, UNAIDS' creation in 1996 was largely perceived to be down to WHO's lack of leadership (Cleves, 2008). Although the IHR revision process was begun prior to UNAIDS' formation, the critiques formed a clear backdrop to the decision to revise the IHRs. These were not, however, sufficient alone; Kamradt-Scott (2015) argues that a shifting security landscape - the end of the Cold War and introduction of new security threats, like disease, as described earlier - aided in arguments that a reinforced and more robust global health system was needed. Therefore, in 1995, the 48th World Health Assembly passed resolution *WHA48.7 Revision and updating of the International Health Regulations.*

Revisions were not passed until 2005. The revisions made three changes whose importance we will explore later in this section:

1. The scope of the regulations was expanded from dealing with only Cholera, Plague, and Yellow Fever to "illness or medical condition, irrespective of origin or source, that presents or could present significant harm to humans" (World Health Organization, 2005, p.7)

2. The ability of WHO to act upon information not provided by States Parties was shifted to WHO "shall offer to collaborate with the State Party concerned ... if the

State Party does not accept the offer of collaboration, WHO may, when justified by the magnitude of the public health risk, share with other States Parties the information available to it" (World Health Organization, 2005, p.13)

3. The Director-General was granted the power to declare a public health emergency of international concern (PHEIC) which is "an extraordinary event which is determined, as provided in these regulations: (i) to constitute a public health risk to other States through international spread of disease and (ii) to potentially require an international response" (World Health Organization, 2005, p.9)

The decade-long revision process is put largely down to the lack of political attention and will towards the revisions from Member States. David Heymann, director of the Expert Committee for the revisions, quoted in Kamradt-Scott (2015) notes that "delays came because of a lack of feeling the urgency of the revision process among the member states" (Kamradt-Scott, 2015, p.110). Furthermore, IHRs (2005) shift from focussing on particular diseases of concern, to viewing *syndromes* as the focus (a shift whose impact was to be explored earlier, and will be explored again later). This shift required a large amount of persuasion before any trial of the new syndromic surveillance could begin, thus delaying the revisions.

A second reason for the delay surrounds the measures that member states take in response to an outbreak in another state. While member states desired the ability to retain their sovereignty and choose measures to protect their borders (Fidler, 2005), these measures inhibited response mechanisms (as was seen with China's reticence to report SARS in 2002). In other words, while states were impressed with how WHO handled China's actions during SARS, they were also nervous about WHO doing so to their own actions should they deem it in their national interest to contravene IHRs - this is likely why the ability to call a PHEIC and issue temporary recommendations (particularly on travel and trade) require an Emergency Committee be convened (Kamradt-Scott, 2015). Additionally, the stepping down of WHO Director-General Nakajima in 1998 gave way for Gro Harlem Brundtland whose agenda did not prioritise infectious diseases and further delayed the revisions of the IHRs (Kamradt-Scott, 2015).

By 2003, the IHRs encompassed three quarantinable diseases whose mere presence in a country activated a chain of response mechanisms designed to protect global public health. Over the previous 30 years, the HIV/AIDS pandemic had raged and eroded confidence in WHO's capacity to be a leader in global health. The process, initiated in 1995, to revise the IHRs had a number of sticking points which mostly related to the lack of prioritisation,

both on the part of the Director-General and the States. These sticking points were fast unstuck by the emergence of SARS.

In many ways the IHRs themselves are modelled on the lessons learned from the SARS response (Hanrieder and Kreuder-Sonnen, 2014). For example: the IHRs mandate that states notify WHO of outbreaks within 24 hours; IHRs explicitly note a desire to limit the impact of restrictions to travel and trade; and IHRs allow for the use of non-state sources of information to verify outbreaks (World Health Organization, 2005). Each of these changes are seemingly in response to the fact that China closely guarded its information of SARS cases and refused to notify WHO because of fears of international travel and trade restrictions which would cause virtual economic sanctions (Fidler, 2004, 2005): mandating fast notification speaks to the delay in notification from China; the explicit desire to limit the impact of restrictions of travel and trade speaks to the fear which motivated China's reticence to notify; and the ability to use non-state sources in verifying outbreaks speaks to the fact that WHO used similar sources and the threat of release to coerce China into revealing the extent of the SARS outbreak (Hanrieder and Kreuder-Sonnen, 2014; Fidler, 2004, 2005; Knoebler et al., 2004).

Three changes seen in the 2005 revisions have implications for our purposes. First, the revisions eliminated the specific pathogens for which WHO must be notified (Cholera, Plague, and Yellow Fever) and shifted to a holistic view of notification. This expansion of the IHRs to cover non-specific and flexibly defined health risks represents a significant expansion of WHO's role in global outbreak response (Fidler, 2005). This picks up, importantly, on the two major disease outbreaks which impacted the IHR revisions; HIV/AIDS and SARS. Both of which were new diseases that took valuable time to find the specific aetiological agent - time that could have been used for response, as well as information gathering (Kamradt-Scott, 2015). The shift to syndromic surveillance, as explored previously with respect to SARS, reflects a broadening of the scope of IHRs to all infectious diseases that fit a given syndromic type, rather than to specific diseases themselves (Roberts and Elbe, 2017).

A second expansion of WHO authority is that WHO can now act upon non-state sources of information. While WHO must offer to collaborate with the state first, if the state refuses the offer "WHO may, when justified by the magnitude of the public health risk, share with other States Parties the information available" (World Health Organization, 2005, p.13). WHO, then, is not only now authoritative over a much more broadly defined 'syndromic surveillance' regime (Roberts and Elbe, 2017) but it can do so

outside of the reports of state apparatus. This expansion of WHO authority is not only a reaction to a perceived lesson from SARS (Fidler, 2005), but it is an expansion of the surveillance rationale typical of Global Health (Harman and Wenham, 2018).

Finally, WHO authority (and the authority of the Director-General) was further expanded within the revised IHRs through the creation of the Public Health Emergency of International Concern (PHEIC) classification. A binary measure whose ultimate decision authority is the Director-General herself, a PHEIC is an 'extraordinary event which is determined .. (i) to constitute a public health risk to other States through the international spread of disease and (ii) to potentially require a coordinated international response.' (World Health Organization, 2005, p.9). The declaration of a PHEIC is designed as a mechanism for attracting political momentum and allowing for the introduction of temporary recommendations by the Director-General. In order to perform this function, IHRs do mandate that the Director-General put together an emergency committee whose function is to make recommendations to the Director-General as to whether a PHEIC should be called and what temporary recommendations should entail; the Director-General is under no legal obligation under IHR to fully comply with the recommendations of the emergency committee (World Health Organization, 2005). The PHEIC is an additional example of WHO's expanding authority because its binary nature implicitly raises certain outbreaks above others in terms of political attention and response (Fidler, 2005).

This function has, in recent cases, caused some controversy for WHO (and Margaret Chan, the only WHO Director-General to have called, or had the power to call, a PHEIC to date); WHO was criticised[4] for calling a PHEIC too early in response to 2009's H1N1 Influenza epidemic (criticism which the 2011 IHR Review Committee dismissed (IHR Review Committee, 2011)), in 2014 WHO was criticised for *not calling a PHEIC sooner* for the onset of the Ebola Crisis, and again in 2014 WHO *did not* call a PHEIC in response to the Middle-East Respiratory Syndrome (MERS) epidemic in South Korea and various states in the Middle East. In recent times, suggestions that the PHEIC's binary nature should be changed for a more progressive or graded scale have surfaced due to the varied critiques (Moon et al., 2015). This would bring the PHEIC more in line with the Influenza Phase scale which caused some contention in 2009 when a PHEIC was called, despite the outbreak remaining at Phase 5 (not Phase 6, the maximum on the scale) (Kamradt-Scott,

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[4]For examples of the European Union's criticisms see Council of the European Union (2011); European Parliament (2011), for reporting on the WHO response see Jack and Dombey (2009); Stein (2010); Enserink (2010); O'Dowd (2010); Watson (2011a), and for broader examinations of the outbreak's impact see Kamradt-Scott & colleagues 2011; 2012; 2012; 2013.

2015).

The counter argument to this is that the flexibility in the temporary recommendations made as part of calling a PHEIC. This is evidenced by the difference in the temporary recommendations made the Ebola Crisis declaration and the Zika Virus declaration in 2016 (World Health Organization, 2016b, 2014b); while the Ebola Crisis PHEIC called for heads of affected states to declare national emergencies and implement exit screening at international airports (World Health Organization, 2014b), the Zika Virus declaration called for no travel or trade restrictions, increased and standardized surveillance for Guillain-Barre Syndrome & foetal microcephaly,[5] and reducing the risk of exposure through general mosquito-bite prevention (World Health Organization, 2016b). Though these recommendations demonstrate fundamental, qualitative differences in the two outbreaks and should rightly be different, they do also demonstrate a measure of flexibility in the function that a PHEIC can have. This demonstrates a significant amount of discretion and authority placed in the Office of the Director-General, particularly when one considers that the role of the EC in the IHRs is advisory and there is no need to follow the advice given (although the publication of the emergency committee reports gives a strong normative pressure to do so).

In addition to the expansion of WHO authority, the IHRs(2005) have guidelines and regulations regarding notification and response. These capacities are arranged at three levels (World Health Organization, 2005): at the community/ primary health level states must be able to detect events of disease/death above expected levels in a particular tempospatial location, report essential information [6] to the appropriate level of healthcare response (depending on organizational structure), and immediately implement preliminary infection controls. At intermediate levels, a state must be able to confirm the status of reports and support/implement additional measures, and assess the urgency [7] of events to report to the national level. At the national level, states must be able to assess all reports within 48 hours and notify WHO immediately (through the National IHR Focal Point) if deemed urgent. For response, national level capacities are; determination of control measures required; provision of on-site assistance through specialised staff, lab analysis,

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[5]The two syndromes whose incidence showed a marked increase in areas with Zika Virus transmission and the main reason that increased Zika transmission became worrisome (World Health Organization, 2016b)

[6]clinical descriptions, lab results, risk profiles, morbidity and mortality statistics, conditions affecting spread, and health measures implemented

[7]serious public health impact and/or unusual or unexpected incidence with a high probability of cross-border spread

and logistics; directly linked to senior health and other officials to approve and implement containment and control measures, and direct liaison with other government departments; establish robust communication between key operational facilities and WHO technical guidance both within-state and between states; creation and maintenance of emergency response plans to include multidisciplinary/multisectoral teams; all on a 24-hour basis.

These core capacities outline what a state must be able to do in order to detect, assess, notify, and respond to an infectious disease outbreak. Fidler (2004) notes that this is a much higher burden of capacity-building than had come before in the earlier ISRs/IHRs. This expansion in the obligations that states have to one another now expands further than simply notifying one another of outbreaks but to having the capacity to respond fully, a burden many of the poorer states lack the financial and human capital to bear.

The revisions of the International Health Regulations, then, shaped global health by increasing the central authority of WHO (through expansion in the scope of the IHRs, granting authority to use non-state sources, and through the creation of the classification of PHEIC over which the Director-General has considerable discretion), and by dramatically increasing the obligations that states parties have to one another through large increases in required core capacities.

Pandemic Influenza

Since the 1918 Spanish Influenza pandemic, an influenza pandemic has occupied the minds of many policymakers, with Kamradt-Scott noting, "of all communicable diseases, pandemic influenza probably remains the most feared by politicians, policymakers, and health practitioners alike" (Kamradt-Scott, 2012, p.90). This prominent position in the psyche of the global health community led to the construction of the 2009 'swine flu' pandemic as a huge health threat. This, complemented by the recent introduction of the revised IHRs, rapid detection and notification, and the rapid production of a vaccine made it the perfect candidate for fully confirming the assumptions of the Global Health Security paradigm.

Beginning in Veracruz, La Gloria, Mexico, the 2009 pandemic of H1N1 (Swine) Influenza was first confirmed by CDC's notification of WHO (under the IHRs) on April 18th 2009 (Chan, 2009). By this point in time, the virus had already spread from Veracruz to Mexico City, the US, and Canada. As part of its responsibilities under IHR, Mexico openly shared epidemiological data with WHO and consistently reported its own response measures. This allowed WHO to assume its role as a coordinator and technical policy advisor by pooling and sharing epidemiological data and providing real-time policy

recommendations (Kamradt-Scott, 2015).

As in previous outbreaks, the IHRs were largely ignored in terms of travel and trade bans; over 20 countries responded by placing travel and trade bans on pork and pork products after WHO referred to the pandemic as 'Swine Flu' in an attempt to cut off any references to it as 'Mexican flu' and cause undue damage to the Mexican economy (Kamradt-Scott, 2015). Some countries (including Egypt whose importance we shall explore later) actually went so far as to cull all pigs in the country (The Telegraph, 2009). The actions of these few countries were reminiscent of Director-General (DG) Chan's own actions in 1997 when all poultry in Hong Kong were culled in response to an outbreak of H5N1 (Avian) influenza - a move which was largely lauded as successful in containing the outbreak (Rosenthal, 1997). This made it difficult for DG Chan to criticise these countries (among other factors).

Under the IHRs, DG Chan convened an IHR emergency Committee (EC) on 25th April 2009 to assess the outbreak's pandemic potential (Chan, 2009). The EC recommended an increase of the phase of pandemic alert be increase from phase 3 to phase 4 and then, two days later, to phase 5.[8] In response to the raising of the alert level to phase 5, designed to indicate that a pandemic is imminent, many questioned the appropriateness of this measure and whether WHO was simply blowing the outbreak out of proportion (European Parliament, 2011; Council of the European Union, 2011; Watson, 2011b; Jack and Dombey, 2009; Stein, 2010). The pandemic phase guidelines were subsequently pulled from the WHO website and, late in 2009, Dr. Keiji Fukuda (then, Director of WHO's Influenza Programme, now Assistant Director General for Health, Security, and Environment) unveiled new pandemic phase definitions which included severity assessments (phase 5; multiple countries in one WHO region) as well as wording to describe a pandemic as imminent (Kamradt-Scott and McInnes, 2012).

After this, two further ECs were commissioned by the Director-General on the 27th of April and 5th June, respectively, the first of which did not approve a raise to phase 6 (full pandemic) but did note that there should be announcements of severity in the daily briefings that WHO was holding (World Health Organization, 2009a). The second EC was given information on the now 28,100 reported cases and advised that the DG take

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[8]The phase alert system of WHO ascribes particular phases to outbreaks of influenza. Current guidance (revised in 2009 in response to the events explained in this paragraph) places phases 1-3 as predominantly animal infections and few human infections, phase 4 as sustained human-to-human transmission, and phases 5&6 as widespread human infection where 5 is regionally located and 6 is cross-regional and a full pandemic. (WHO, 2015a)

the step to call the first ever Public Health Emergency of International Concern (World Health Organization, 2009b). From this point, WHO continued to play its classical role of intelligence coordination and policy advice and sought not to be overly prescriptive with its advice, noting that measures *should* be implemented as opposed to directing activities which it has the power and authority to do (through both its constitution *and* the revised IHRs) (Kamradt-Scott, 2015).

Largely, the IHRs are noted to have functioned successfully in the response to pandemic (H1N1) influenza (Katz, 2009; IHR Review Committee, 2011; Kamradt-Scott and Lee, 2011; Kamradt-Scott, 2015). This view is largely in response to the *epidemiological* success, however from a *political* perspective its success was marred by an investigation by the British Medical Journal (Cohen and Carter, 2010) alleging that there was misconduct occurring within the Emergency Committee (Kamradt-Scott and Lee, 2011). When the emergency committee was first convened, DG Chan did not release the identities of the members and the BMJ (Cohen and Carter, 2010) alleged that this was because EC members had close ties and conflicts with pharmaceutical companies and thus were overstating the dangers of the pandemic in order to push states into stockpiling antivirals and vaccines (Elbe et al., 2014a). These allegations were refuted by DG Chan and she released the identity of the EC members (World Health Organization, 2010). This incident - in addition to the confusion over phase 5 pandemic designations, removing the definition, and then *changing* that definition mid-outbreak - levelled a large amount of criticism at WHO's openness and transparency in responding to the outbreak (Kamradt-Scott, 2015).

This pandemic was not only the first test for IHRs but also the catalyst for the first ever IHR Review Committee (Davies et al., 2015). Two further IHR Review Committees have been convened: the second in 2014 as a review of the second set of extensions for member states to implement IHR; and the third in 2016 reviewing the implementation of IHR in the Ebola Crisis. The IHR Review of the H1N1 pandemic, chaired by Professor Harvey Fineberg, was requested by the Executive Board in January 2010 and tasked with assessing the response to pandemic H1N1 influenza, assess the functioning of the IHR, and to identify lessons learned. Overall the comments of the committee were positive and reflected a general commendation for the global response to H1N1 and WHO's actions, though some criticisms were made (IHR Review Committee, 2011).

The lessons identified fell under five main themes; global health's core values, the unpredictability of influenza, how H5N1 expectations shaped preparedness, WHO's dynamic tensions between being a normative leader but also bound to its member states,

and the limitations of the local systems in responding to a global event. The first point of note is that the report effectively absolves WHO of the earlier accusation that the EC decision was motivated by pharmaceutical company interests; noting that '[a]lthough confidentiality represented an understandable effort to protect the members from external pressures, this paradoxically fed suspicions that the Organization had something to hide' (IHR Review Committee, 2011, p.16).

The report is generally positive about the functioning of the IHRs too, its first summary conclusion states that "IHRs helped make the world better prepared to cope with public health emergencies" (IHR Review Committee, 2011, p.10). In spite of this, the first four recommendations made by the committee relate to the global health norm setting by IHR and how implementation is not sufficient:

1. Accelerate implementation of core capacities required by the IHR

2. Enhance the WHO Event Information Site

3. Reinforce evidence-based decisions on traffic and trade

4. Ensure necessary authority and resources for all National IHR Focal Points

The prominence of these four recommendations as the *first* set made by the committee reinforces the perception that IHRs are important for the functioning of disease surveillance and response and demonstrates the committee's anxiety around IHR non-compliance (Davies et al., 2015). In particular the recommendations suggest that WHO should do more to engage states in building capacities to comply.

The second tranche of recommendations is aimed more at WHO's response to the outbreak as opposed to the function of IHRs (IHR Review Committee, 2011). Again, the response is generally positive but some criticisms remain. Recommendations 5-11 in this tranche focus on WHO internal response capacity (recommendation 5), Emergency Committee appointments (recommendation 6), pandemic assessment, guidance, and documentation (recommendations 7-9), communications and transparency (recommendation 10), and vaccine distribution (recommendation 11).

Third, the committee recommendations focussed around the notion that "The world is ill-prepared to respond to a severe influenza pandemic or to any similarly global, sustained, and threatening public health emergency" (IHR Review Committee, 2011, p.23). In particular the recommendations suggested the establishment of a 'public health reserve corps' (p.24, recommendation 12), the creation of a contingency fund for emergencies (p.25, recommendation 13), create an agreement on sharing samples and accessing vaccines (p.25,

recommendation 14), create a large scale influenza research programme (p.28-29, recommendation 15). What is particularly interesting here are the parallels seen between these recommendations and those of the Ebola Interim Assessment Panel which equally calls for the creation of a contingency fund (with a capitalization of US$100million) and a WHO Centre for Emergency Response and Preparedness (World Health Organization, 2015e).

From its initial boosting at the January 2000 meeting of the UN Security Council through to its confirmation by the 2009 H1N1 pandemic, Global Health Security has become the dominant framing for understanding health on a global scale. In the HIV/AIDS pandemic it began its sharp upward trajectory by being cited as the cause for much of the instability in the African continent. Then with SARS it entered the developed world and over-shadowed sovereignty concerns to emphasis a globally interconnected world, vulnerable to health threats from anywhere. The revisions of the IHRs in 2005 enshrined, in international law, the language, logic, and *means* of Global Health Security. Then its first test in the 2009 H1N1 pandemic demonstrated that it could not only be used to frame threats effective, but also to respond effectively.

4.3.2 Implications of the Global Health Security Framing

Having demonstrated above how the Global Health Security (GHS) framing developed over time, we can now turn to its implications. The discourse of GHS is not simply a way of speaking, but it shapes the way we understand and think about disease outbreaks. This section looks at the implications of the GHS framing for our understandings and perceptions of disease outbreaks, looking towards its effects on the scale of problems (local, national, global), its stigmatising effects, and its focus on a national means of response.

A useful example of the effects that securitization has on politics and governance comes from a study on environmental security (Hameiri and Jones, 2013). In their study of environmental security governance in Southeast Asia, Hameiri and Jones (2013) note that by recognising an issue as a non-traditional security threat, the perspective (and therefore governance) of that issue becomes recognised as trans-national in nature. Extending this to health, one can see that the HIV/AIDS pandemic not only directly contributed to a global perspective on health - as described above - but through its securitization, indirectly pushed health onto the trans-national agenda.

This transnationalization, however, is not the sole reason that health security is an important shift in outbreak responses. The securitization of health has led to a number of other changes which have been studied and critiqued (Elbe, 2002, 2005, 2006, 2010, 2011;

Elbe et al., 2014a,b; Ingram, 2010; King, 2002; Peterson, 2002; Aldis, 2008; Rushton, 2011; McINNES and LEE, 2006; McInnes and Rushton, 2012,). One key figure in the development of theory with regards to the securitization of health is Stefan Elbe[9] whose work pertains to the global politics of disease and has focussed on the turn towards health security since its beginnings. In particular, Elbe's early work focussed on the HIV/AIDS pandemic's role in securitization (Elbe, 2002, 2005, 2006, 2008). Many of his works point out that securitization has played a role in attracting attention to global health issues, including subsequent political power, and financial and materiel resources (Elbe, 2006).

Framing an issue as a security threat does, as Elbe notes, bring a number of challenges along with all the attention (Elbe, 2005, 2006). These challenges occur on both a macro and micro scale. One macro scale challenge is the increasing involvement of military and security actors in outbreak response and planning. As an issue becomes more entangled with the narratives and activities of security actors, Buzan et al. (1998) argue, so too do those security actors become increasingly involved in the policy, planning, and operational activities surrounding the issue. In the case of health, this is starkly apparent when one considers that UNSCr 1308 directly stipulates the involvement of peacekeeping forces in health activities (UN Security Council, 2000). This does not preclude the fact that those peacekeeping forces would be in Africa regardless of their new health role, but does signify an extension of the military repertoire to include civilian health action. This involvement of military actors in health issues is not a wholly new phenomenon; the impacts of Spanish Influenza in 1917 on the troops deployed in Europe led to the formation of surveillance and epidemiology for influenza by the US Armed Forces (Watterson and Kamradt-Scott, 2015). However, as we look towards Ebola, we see a different pattern emerging where militaries are called to aid overwhelmed civilian infrastructures. This is evidenced by Medecins Sans Frontieres calling for the involvement of military actors in the response to the Ebola Crisis (Liu, 2014), the first time in the organization's history. Additionally in Liberia, 3000 US Armed Forces troops were deployed to help USAID (the US Department of States' Humanitarian Aid agency) in their efforts, and in Sierra Leone the Minister of Defence was appointed director of the National Ebola Response Centre (Kamradt-scott et al., 2015).

A further macro-scale impact is the increased use of national logics for collective action. Sara Davies (Davies, 2008) argues the origination of the securitization framing in the United States - followed by the EU, Australia, and Canada - threatened the global nature

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[9]Professor of International Relations and Director of the Centre for Global Health Policy, School of Global Studies, University of Sussex

of WHO's role by providing a rationale for states to protect their own borders and look towards state-centric, protectionist solutions for disease outbreaks. This is evidenced by Canada's creation, in 1997, of the Global Public Health Information Network (GPHIN) which is a web-based system that collates online information concerning outbreaks. WHO, in response to the rising use of the securitization framing (and in the midst of revising the IHRs) created the Global Outbreak and Alert Response Network (GOARN) (Davies, 2008). GOARN built on GPHIN between 2000 and 2002 to add verification and field response mechanisms. Still, GOARN drew heavily on this *national* security model; not only was GOARN built upon a Canadian surveillance mechanism for health security but full funding for GOARN's Strategic Health Operations Centre in WHO headquarters, Geneva was provided by the United States (Davies, 2008), further reinforcing the perspective that even so-called *global* efforts are state-focused. An additional action to regain authority and control, as we shall see later in the chapter, was the revisions made to the International Health Regulations which both revised a framework which was widely acknowledged as failing but also re-emphasised WHO's centrality to outbreak response.

According to Sarah Dry (2010), this logic of state security has had an impact on the perceptions of causality for outbreaks and subsequently shifted the way responses are mounted. The logic presented, largely by Western states, creates an acute interpretation of causality which focusses on early warning systems and fast-twitch responses; this, Dry (2010) posits, sits in opposition to a more long-term causality which focuses on the root causes of zoonotic disease, long time-frame population and epidemiological tracking, and the building of health systems resilient enough to treat patients as they come. What the securitization of SARS saw, then, was an increased weight placed on *surveillance* for response as opposed to data for health.

A third impact on this scale is the focus on epidemic diseases that securitisation can engender. For many states, the most feared threats to national biosecurity are the acute, high-impact diseases or pathogens that could be used as a bioweapon; diseases which spread fast, cause fear and harm, and require rapid response (Elbe, 2011; Rushton, 2011). On the other hand, many of the developing nations have large problems with endemic disease, non-communicable diseases, and diseases of poverty; all of which gain less attention in policymaking when epidemic disease is elevated as a significant threat to national security (Elbe, 2011; Rushton, 2011). Additionally, this focus on disease as a threat shifts action towards surveillance, detection, and response as opposed to noting possibilities for prevention or reducing risk of an outbreak occurring, such as; mapping animal and human

migrations to detect risk zones and providing basic health infrastructure and services to developing countries (all-round health infrastructure as opposed to health systems designed to detect and respond to an outbreak) (Davies, 2008; Dry, 2008).

Finally, the securitisation of health has also created some micro, social level issues which have impacted the lives of those infected. One such example is the stigmatisation of those infected (Elbe, 2011); particularly in Africa, the securitisation of HIV/AIDS has painted those living with the illness as "dangerous 'outsiders' and a threat to society" (Elbe, 2006, p.130). this has created difficulties for the NGOs in the region attempting to engender tolerance and help sufferers of the disease. Additionally, in the case of the Ebola Crisis, a cocktail of fear, government mistrust, and stigma led not only to healthcare workers being attacked, but survivors of Ebola being ejected from their homes by their landlord, rejected from their communities, and even being rejected by loved ones (Beyan, 2015; Wilkinson and Leach, 2015).

4.4   Responses to Insecurity

This section focuses on the attempts to ameliorate the insecurity constructed through the Global Health Security framing. First, surveillance expansions govern global public health through counting and locating outbreaks and syndromes, while reinforcing the containment logic inherent in the GHS framing. Second, through expanding WHO authority and scope to leverage the action of states for reporting and responding as well as coordinating and directing collective action in responses. Finally, through the rapid production of biomedical countermeasures (vaccines, therapeutics, and diagnostics) as fast, technological responses to the social issues inherent in disease outbreak responses. This section takes each of these pillars of the GHS paradigm in turn.

4.4.1   Outbreak Surveillance

Surveillance has become an important part of outbreak response (Youde, 2012). Its practice involves states, institutions, and doctors reporting incidence of disease to WHO and labs so that the data can be compiled and outbreaks identified. The central utility of surveillance in the Global Health Security paradigm is for *rapid* responses to contain disease - as opposed to using surveillance for monitoring trends in migration, non-communicable disease, and animal migration (all indirect social determinants of disease). The focus here is on how surveillance has moved from a simple epidemiological tool to a global regime (Youde, 2012).

In addition to the securitisation, we return to the reluctance of China to officially notify WHO of the outbreak. According to Fidler (2004, 2005, 2007), the SARS outbreak (and this incident in particular) signalled a change in something very fundamental about the world order; post-Westphalian geopolitics. During the Thirty Years' War (seen as the bloodiest war to date at the time), 194 states organised a peace conference in 1644 to end the violence and subsequently signed a treaty (after four years' negotiation) in Westphalia, Germany on October 24th 1648. What the treaty of Westphalia enshrined was, in effect, state sovereignty; the affairs internal to a state's borders were the responsibility solely of that state and no other state could interfere. As described by Henry Kissinger (Kissinger, 2015) and Richard Haass (Haass, 2017), this Westphalian world order has been slowly morphing over the last century into a world order where connectedness to internal affairs of other states becomes a foreign policy objective as part of the maintenance of peace, security, and human welfare.

This transformation became visible in the global health arena with the arrival of SARS. A particular example used by Fidler (2004) to demonstrate this is the use of non-governmental information sources as confirmation of an outbreak in China. In the beginning of the outbreak, China was reluctant to officially notify WHO of SARS, viewing the response as something which is part of the state's internal affairs and fearing travel and trade restrictions (as well as the resulting economic harm). WHO, however, was unable to activate its response mechanisms unless incidences were officially reported. As such, WHO used non-state information to pressure China into releasing data under the threat of other states restricting travel and trade because of the outbreak. This leveraging of non-state information is one example of this shift towards a disregarding of state sovereignty for the common global benefit.

This move towards syndromic surveillance, as pushed forward by the three facets of the outbreak described in the previous section, has been studied in the long-term by Stephen Roberts and Stefan Elbe (Roberts and Elbe, 2017). Roberts and Elbe study the evolution of three syndromic surveillance systems (ProMED, GPHIN, and HealthMap) to demonstrate not only an increasing reliance on surveillance systems but an increasing reliance on *algorithmic* data processing; in moving from state-only verification to using non-state reporting sources, an excess of information is created and algorithms are required to process this data into formats that are usable for response. This move, the authors argue, signified a shift in the *role* that knowledge plays in the governance of health; shifting from knowledge that directly finds outbreaks (through diagnostic tests,

virology/bacteriology/parasitology, and standard scientific measures) to a more 'surface' mode of knowledge which uses signs and proxies as the markers for *potential* outbreaks (Roberts and Elbe, 2017). This systemic use of algorithms in surveillance, then, bolsters Dry's argument of early-warning and fast response as the focus of governance; algorithmic syndromic surveillance creates a 24-hour, 7-days-a-week picture of where outbreaks *may* crop up and allows for fast-twitch response.

Surveillance, then, has evolved from a simple epidemiological tool into a global regime (Youde, 2012). First, through the progressive expansion in who can provide data for surveillance through the revised IHRs allowing WHO to act upon information from non-state sources. Second, through the subordination of state sovereignty under global interests through leveraging surveillance data. Finally, through the expansion of what is monitored by shifting from a taxonomy of diseases *known* to a taxonomy of *syndromes*, a much more expansive definition of health which allows for multiple aetiologies for symptom profiles.

4.4.2 Expanding WHO Authority

Since its establishment in 1948, WHO has had a significant measure of authority in global public health, imbued by its constitution to coordinate and direct international health activities - particularly in health emergencies - and being an international organization which can directly affect member states' policy *without* ratification. In the latter half of the 20th Century, however, WHO's leadership in outbreak response was in crisis. Its activities (or lack thereof) in response to HIV/AIDS had spurred the creation of UNAIDS, and outbreaks of Plague and Ebola in India and Africa, respectively, had shaken confidence in WHO's capacity and willingness to act (Cleves, 2008). In an attempt to recapture some of its authority and to re-establish its legitimacy, WHO Director-General Hiroshi Nakajima requested the WHA begin the process of revising the International Health Regulations in 1995.

This process of revising the IHRs took a full decade because of, among other factors, a lack of expediency or sense of urgency on the part of members states (Kamradt-Scott, 2015). This friction however was soon unstuck by the onset of the SARS outbreak; suddenly a developed country, a global travel and trade hub no less, was infected with a deadly virus which had never been previously encountered by modern science (Curley and Thomas, 2004; Elbe, 2008).

In beginning months of the outbreak, a clear shift in WHO's authority over outbreak response became apparent. China was reticent to officially report SARS to WHO for fear

of the economic and reputation damage that an outbreak could cause (Fidler, 2004). This was in spite of WHO being fully aware of the outbreak, and impeded action on the part of WHO (which was not empowered to act until an official report was made by the state). WHO, however, was able to threaten with 'naming and shaming' China in order to coerce the state into releasing an official report. This use of non-state information and the power to publicly normatively shame a state transformed the notion of state sovereignty and allowed WHO to supersede a state's sovereignty (Fidler, 2004).

Using non-state sources and shifting from specific pathogens to syndrome surveillance were not the only changes that SARS spurred, however. SARS also created enough political will for the IHR revisions to go forward (Hanrieder and Kreuder-Sonnen, 2014), and so in 2005 the revised International Health Regulations were passed by the WHA (World Health Assembly, 2005). These revised IHRs - enshrined in binding international law - codified the authority extensions that WHO had performed in the SARS outbreak. Not only this, but the revised IHRs gave WHO additional power in the form of constant contact with National IHR Focal Points, *mandated* core capacities for each member state, and the authority of the Director-General to call a Public Health Emergency of International Concern and set emergency measures and recommendations (World Health Organization, 2005).

The IHRs entered into force in 2007, but did not face their first large scale pandemic test until 2009 when pandemic of H1N1 influenza hit Mexico. According to the 2011 IHR Review Committee 2011, the IHRs performed well in the H1N1 pandemic (Katz, 2009). However WHO did have some problems with respect to suspicions that WHO's Emergency Committee had ties to pharmaceutical companies and thus overstates the extent of the epidemic (Cohen and Carter, 2010; Kamradt-Scott and Lee, 2011). Furthermore, there were member states putting into place measures which are over and above recommendations made by the Emergency Committee (The Telegraph, 2009). In this, the first real test of WHO's authority under the revised IHRs, the reluctance that WHO showed to fully utilise its authority fundamentally undermined said authority (Kamradt-Scott, 2015).

In addition to WHO undermining its own authority, the IHRs - while symbolically approved by all member states - remains unimplemented in the majority. In 2016, the IHR Review for the Ebola Outbreak noted that only 33% of states parties had implemented the *minimum* IHR core capacities and that "many countries clearly have a long way to go" (IHR Review Committee, 2016, p.18). In addition to this, only 3 of the 15 recommendations made 5 years earlier - in the IHR Review of the Influenza Pandemic - have

been implemented. This demonstrates that, while WHO has its authority to act imbued through its constitution and the IHRS, its authority over states is muted.

These instances demonstrate how WHO has become a focal organization for the GHSp. From demonstrating weaknesses in response to the AIDS pandemic, it became the central organization in the SARS response, leveraging non-state information sources to influence China into officially reporting SARS cases. This new found power was enshrined in the revised IHRs, giving WHO full authority to declare a state of emergency above any state. Finally, in the 2009 H1N1 pandemic, WHO was widely noted to have not used all of its authority and was mired in issues of transparency and communication.

4.4.3   BioMedical Countermeasures

The corollary to securitization of health, however, is that there is an increasing tendency to pharmaceuticalise this security (Elbe, 2008).The pharmaceuticalisation of (in)security came to the fore in the response to pandemic influenza because of an increasing scramble by states to purchase flu vaccines and the antiviral drug, Tamiflu (Elbe et al., 2014a). This pharmaceuticalisation is typified by the increasing use of technical fixes like vaccines, antimicrobials, and other medical countermeasures in order to fix social problems. This is often at the expense of other possible methods like basic sanitation, quarantine, contact tracing, and preventative measures.

In addition to shaping the governance and policies of outbreak response, the pharmaceuticalisation of (in)security has also closed down discourse. In particular, we see the use of 'evidence-based medicine' as a perspective supporting the use of pharmaceuticals and medical products which are backed up by randomized-controlled trials, the supposed gold standard for evidence (Kamradt-scott, 2013). This perspective closes down discussions related to patients' lived experiences and community knowledge which may not have the required evidence base or be expressed in the medical lexicon (Lancaster et al., 2015, 2017a,b; Kamradt-scott, 2013).

Firstly - as with all the outbreaks explored in this chapter and demonstrating the general dominance of the security framing in current global health thought - pandemic H1N1 influenza was framed as a security threat. In fact, pandemic influenza in general was noted by WHO as "the most feared security threat" in the 2007 World Health Report (World Health Organization, 2007, p.45). In general, the securitization of the H1N1 pandemic itself is unremarkable given the near ubiquity of the framing and the fact that influenza had been securitized many years prior (Kamradt-Scott and McInnes, 2012).

Second, stockpiling demonstrates an increasing tendency to pharmaceuticalise the (in)security of populations. In the 2009 H1N1 Influenza pandemic, we see this shift crystallising through a specific drug; Tamiflu (Elbe et al., 2014a).[10] After the onset of the 2009 H1N1 outbreak, states - particularly the developed ones in the European Union (Elbe et al., 2014b) - rushed to purchase stocks of Tamiflu from producer Genentech in order to ensure they were prepared for any oncoming outbreaks in their territory. This stockpiling of medicines is not entirely new; the Clinton Administration created the US Strategic National Stockpile in 1999 (Graham, 1998) and Project BioShield (O'Reilly, 2007) aimed to add to the stockpile. This stockpiling, however, caused a shortage in the antiviral drug which disadvantaged those developing countries who could not afford to buy them (Kamradt-Scott and Lee, 2011).

Pharmaceuticalization is a subframe of the medicalization framing. The 'health security' frame does not just frame health as a security concern, but it makes security a medical concern (Elbe, 2010). In this medicalized frame, we see medical personnel becoming security actors, just as securitization saw security actors becoming medical actors. In particular, there was a shift over the course of the early 2000s wherein bioterrorism response became an 'all-hazards' approach and increasingly the line was blurred between the realms of biodefence (bioterror response) and public health (Congress, 2006). In particular, we see the responses to bioterrorism events and natural disease outbreaks being differentiated less and less - including within the IHRs where the definition of a PHEIC is that the outbreak can be deliberate *or* natural in origin.

This infiltration of medical actors into security is expressed in a more specific form in pharmaceuticalisation. In this we find an increasing focus not just on medical actors, metaphors, and solutions but a much more *bio*medical focus wherein solutions are pharmaceutical in nature, be they drugs, vaccines, or medical countermeasures. This shift is demonstrated by the US 2004 legislation, *Project BioShield* (O'Reilly, 2007) which appropriated US$5.6billion to fund the production of antimicrobials, vaccines, and diagnostic technologies which are relevant for biodefence that would otherwise be unfunded because they do not fulfil a broader public health need (O'Reilly, 2007). In effect, BioShield demonstrated a strong push towards the provision of pharmaceutical resources for security objectives.

Returning to the 2009 H1N1 pandemic we see a similar rush to purchase and stockpile pharmaceuticals as a means to ameliorate the insecurity of populations (Elbe et al.,

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[10]Tamiflu is the brand name for oseltamivir phosphate, an antiviral drug which targets the neuraminidase protein on the influenza virus (the N in H1N1).

2014a). This pharmaceuticalization, like medicalization, has increased the participation of medical personnel and particularly those involved in medical countermeasure research, development, and production. The inclusion of pharmaceutical and medical actors has opened up space for the privileging of knowledges that are specialized and provide such representatives with even more political power to set preparedness policy (Kamradt-scott, 2013).

One well studied tool in part set up by the pharmaceuticalization of health security is the prevalence of 'evidence-based medicine' which frames medical knowledge without a particular evidence-base (namely large scale randomized controlled trials) as inferior and promotes the use of 'evidenced' knowledge and tools like vaccines, antivirals, and diagnostics. One example of this phenomenon is the research done by Lancaster et al. (2015, 2017a,b) into Australian Drug Policy which finds that the 'evidence-based medicine' framing limits the space for discussion from patients with lived-experience and privileges the views of those medical professionals who can back up their knowledge with peer-reviewed studies. In addition, the very means of discussion, narratives, and arguments employed can constrain the inclusion of non-medical knowledge because they were not ale to frame these types of knowledge in the 'medical' lexicon or discourse.

Secondly, Adam Kamradt-Scott shows for Influenza Preparedness Policy how this evidence-based medicine framing has perpetuated the pharmaceuticalization of health security and the stockpiling of medical countermeasures, and how this has shaped outbreak response (Kamradt-scott, 2013). In particular, he notes that 'within days of the WHO Director-General declaring the outbreak in Mexico, attention had shifted to the capacity of pharmaceutical manufacturers to produce a pandemic-specific strain, even though it was acknowledged that such actions may inadvertently cause deaths' (Kamradt-scott, 2013, p.116). This reliance on pharmaceuticals, then, not only places high value on tools available only to rich countries but it also privileges those tools in further discussion, placing constraints on the possible knowledges used.

In addition to the constraining of knowledges, pharmaceuticalisation has had a real impact on policy; creating pushes to allocate funds for countermeasure production, giving pharmaceutical companies legal cover for side-effects and injury compensation claims, creating novel regulatory approval methods for low prevalence diseases, and allowing for emergency use of pharmaceuticals without the necessary regulatory approval (O'Reilly, 2007; Elbe et al., 2014a). These policy interventions particularly came to the fore during the Ebola Crisis; with no vaccines or medical countermeasures for Ebola approved by

regulatory authorities, there was a scramble to provide emergency use authorisations and ethical approvals for trials in order to produce therapeutics and vaccines (Gaffney, 2014).

In summary, the insecurity that the Global Health Security framing had helped construct were understood as being ameliorated by three central tenets. First, global syndromic surveillance allows for constant vigilance for health threats. This global surveillance regime functions under the containment logic inherent in Global Health Security and aims to understand where disease epidemics occur early in order to rapidly contain their spread. Second, expanding WHO authority occurred through WHO's centrality in outbreak response and its participation in securitizing infectious disease. This shift of WHO authority to being *above* the sovereignty of states is a central tenet of the GHSp. Finally, the production of BioMedical countermeasures aims to rapidly provide vaccines, therapeutics, and diagnostics to areas with infectious disease outbreaks. This fits the securitization discourse's affinity for technical fixes as opposed to political or economic solutions. Furthermore the centrality of BioMedical countermeasures to response efforts privileges the knowledge and expertise of those clinicians who fully understand their function and use.

4.5 Summary

This chapter has provided some context for the empirical argument of this thesis, highlighting how a historical trend towards a Global Health Security paradigm has occurred. The chapter has, first, described the historical roots and positioning of the World Health Organization as the central actor in outbreak response. It's history as the world's health body has been punctuated with a number of successes and failures, notably the eradication of smallpox (success) and its response to the HIV/AIDS pandemic (failure). WHO's centrality in outbreak response has increased over the course of the 21st Century, despite steady decreases in the funding it has available in order to play that central role.

Next we turned to the Global Health Security framing, noting its development as two parallel discourses of global health and health security. Global health, here, refers to the shifting understanding of health as a global problem needing addressing via high level governance and surveillance mechanisms. Health security refers to the discursive turn towards referring to health as a threat to international and national security. Under this turn towards Global Health Security (GHS) we saw its impacts on how we conceptualise and understand health: creating a highly trans-national governance understanding, despite a national-level operational understanding; creating a situation where individuals and states that are experiencing disease are stigmatised and penalised; and understanding

disease outbreaks as a technical object that can be fixed with technological innovation.

Finally, we explored how these understandings have created the three central tenets of the Global Health Security paradigm (GHSp). First, the global and trans-national understanding of health led to an increasing expansion of surveillance including expanding *who* can survey and *what* is surveyed for. Second, the trans-national and technical understanding of infectious disease led to an increasing centrality for WHO which gained authority over states through the IHRs and is a highly technical agency responsible for coordinating and directing outbreak responses. Finally, the technical and stigmatising understanding of health led to an attention to the rapid development of biomedical countermeasures which are both technical fixes but also activities which can frequently be done *at a distance* from the site of outbreaks, in a laboratory, rather than actively treating patients in the field.

Having explored the fundamental narrative and tenets of the GHSp, the next chapter we outlines the 2013-2016 west African Ebola Crisis and highlight that each of the tenets of the GHSp were absent or ineffective, framing the crisis as a fundamental challenge to the assumptions of the GHSp. Next the chapter looks at document and interview data to ask the question *who* is learning *what* from the Ebola Crisis?

Chapter 5

Embedding Case: The Ebola Crisis of 2013-2016

5.1 Introduction

In December 2013 a threat was 'lurking far from the watchful eyes of health authorities' (Garrett, 2001, p.92). The commonly explained epicentre for what became the worst Ebola crisis in history was a 2-year old child playing near a tree which was a nest for fruit bats, the likely vector for Ebola Virus Disease (EVD) (Roberts, 2014). Just over 2 years later, by the 17th of February 2016, the outbreak had a cumulative 28,603 cases and 11,301 deaths in Guinea, Liberia, and Sierra Leone (Centers for Disease Control and Prevention, 2016).

Clinical symptoms for EVD are: vomiting, headache, nausea, diarrhoea, difficulty breathing, fatigue, abdominal pain, loss of appetite, muscle or joint pain, unexplained bleeding, difficulty swallowing, or hiccups. Beyond these symptoms, although in many cases because of them, EVD foments fear at a much deeper, societal level. This fear is not simply a fear of infection but much broader anxieties; disgust sensitivity, body vigilance, and a tendency to overestimate the severity of EVD (Blakey et al., 2015). The fear of the outbreak led to excessive travel and trade bans from countries (Gulland, 2015; Rhymer and Speare, 2017), and the three most affected countries were effectively ostracized from their region with 47 African countries prohibiting entry (Rhymer and Speare, 2017, p.14). In total, with loss of life and trade bans, the outbreak cost the three most affected countries a total $2.2billion in GDP losses alone.[1]

Death statistics and economic losses alone, however, are simply the surface impact that

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[1]according to World Bank GDP projections for each of the three countries (World Bank, 2017)

the outbreak had on the three countries. The countries are some of the least economically developed[2] and had weak health systems to begin with, already stretched by HIV/AIDS, Tuberculosis, Malaria, and Lassa Fever, amongst other endemic diseases. The Ebola Crisis further stretched these already strained health systems. Due to EVD's disproportionate impact on healthcare personnel, an estimated 8% of Liberia's healthcare workforce was reduced by the outbreak, infant and under-5 mortality increased by 20% and 28%, respectively, and maternal mortality rose by 111% (Evans et al., 2015). Additionally, Parpia and colleagues estimate a reduction in healthcare access of 50% and further estimate indirect lives lost due to loss of HIV/AIDS, Malaria, and TB service provision at 10,623 (Parpia et al., 2016).

In Chapter 2 we noted how knowledge accumulated in cycles, task experiences are abstracted and transformed into knowledge which can then be used in similar task experiences in the future (Kolb, 1984; Argote and Miron-spektor, 2011). This process, however, is interrupted by the exceptional characteristics of crisis wherein event rarity, heterogeneity, and ambiguity impede knowledge abstraction and use. Codified knowledge's transferability allows it to overcome these rarity and heterogeneity barriers as well as the *process* of codification allowing for an explanation of complexity and interconnections (Zollo and Winter, 2002; Argote and Miron-spektor, 2011; Echajari and Thomas, 2015). This chapter explores the embedding case of the 2013-2016 Ebola Crisis, exploring the knowledge accumulation around the outbreak as a whole.

This chapter first aims to provide an account of the outbreak, drawing out similarities to the Global Health Security paradigm detailed in the previous chapter. In this narrative, an argument will be made that the Ebola Crisis followed previous outbreaks and was constructed, early in the outbreak, as a threat to global health security. Additionally, this narrative will also argue that the methods by which that threat was to be combated – surveillance, WHO authority expansions, and the production of biomedical countermeasure – were absent in this outbreak. In this way, section 5.2 constructs the Ebola Crisis as a crucial case: a case in which the dominant paradigm's central tenets were insufficient for response and from which extensive double-loop learning (assumption-challenging) is to be expected.

Section 5.3 delves further into the right-hand side of the knowledge accumulation cycle, looking at the codification of knowledge to abstract the experiences of the Ebola crisis. The section will demonstrate first that, broadly, the lessons that were codified from the Ebola

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[2]According to the Human Development Index in 2014 Guinea was 183rd with an HDI of 0.414, Sierra Leone was 179th with an HDI of 0.420, and Liberia was 177th with an HDI of 0.427 (UNDP, 2015).

outbreak fit the Global Health Security Paradigm: showing a deep analysis of medical countermeasures, the failures of WHO's authority, and lapses in surveillance. Second, the section will show the emergence of newer lessons, explored in less depth but still prevalent, on the community responses, health systems of the affected countries, and the need for effective communications (both with the public and internal to response coordination). This will set the stage for a more in depth analysis of two cases in the following chapters.

Section 5.4 moves over to the other side of the knowledge accumulation cycle, looking at the *use* of knowledge. The section will discuss the results from the 23 interviews conducted with report users. The results first show a scepticism about the implementation of the recommendations from the so-called lessons learned reports. The results then show how the positive aspects discussed by some interviewees are negative for others because of a limited participatory process, lack of applicability of lessons, and weak use of relevant evidences. Finally, the section will discuss the ways in which users learn and manage knowledge and show how personal networks form a central basis for this, making participatory processes and dissemination key and under-served aspects of report construction.

5.2   Outline of the Ebola Crisis

This section aims to provide an outline of the events that unfolded in the outbreak of Ebola Virus Disease (EVD) in West Africa and the global response. The outline will demonstrate two things: first, the Ebola Crisis was framed by WHO, Governments, and the media as both a security threat and an unprecedented crisis. Second, that each of the main methods for ameliorating constructed insecurity were not found in this outbreak; medical countermeasures (despite 40 years' of research into Ebola) were not available, biosurveillance was delayed and warnings not heeded, and WHO's expanded authority was not used and subsequently undermined by the creation of the United Nations Mission for Ebola Emergency Response in September 2014. These sections broadly follow a chronological account (overlapping in places), discussing surveillance in the early outbreak phase, the failings of WHO into the mid-outbreak phase, and looking towards the medical countermeasure clinical trials established in the later phase of the outbreak.

5.2.1   5.2.1 Ebola the Global Health Security Threat

In the previous chapter, we saw an increasing tendency over the last 30 years to frame infectious disease as threats to security. The 2013-2016 Ebola Crisis was no different to this trend: the Ebola Crisis was surrounded by fear, stigma, and a crisis narrative

(Mcinnes, 2016). Additionally, Ebola has long been associated with bioterrorism as a probable bioweapon which directly conflates outbreaks and security[3]. Securitization, as defined and discussed in the previous chapter, is a discursive phenomenon which frames a topic in such a way as to make them existential threats to national security (Buzan et al., 1998). This section looks at the Ebola Crisis as an event which was securitized - both at the global and the community level - to demonstrate that it follows the dominant, 'global health security' narrative of the 21st Century.

The securitized narrative emerged early in the Crisis with the description of the outbreak by Medécins Sans Frontiéres as 'unprecedented.' In a report from Guinea on March 31st 2014, Mariano Lugli, MSF's Conakry Project Coordinator commented that "we are facing an epidemic of a magnitude never before seen" (MSF, 2014b). The use of 'unprecedented' and describing the outbreak as 'never before seen' exceptionalizes the outbreak, framing it as an event which is outside of the norm. Importantly here, we are in no way making the argument that the Ebola Crisis wasn't exceptional - the use of the Crisis as a case for this thesis rests on exactly the opposite premise - but that media and expert narratives surrounding the outbreak *constructed it as such* (Mcinnes, 2016). Furthermore, the framing Ebola as an exceptional crisis was 'determined less by levels of mortality and morbidity ... but by the success with which a disease or condition can be constructed as a global health threat' (Mcinnes, 2016, p.380); thus fitting in with the 'global health security' narrative constructed throughout the 21st Century.

Three months later (June 2014) the response had yet to scale up, the epidemic had spread from Guinea to Liberia and Sierra Leone, and Dr Bart Janssens, MSF Director of Operations, stated that "there is a real risk of it spreading to other areas" and that "the epidemic is out of control" (MSF, 2014a). Janssens further commented that MSF staff had "reached our limits" and were overwhelmed by the number of patients and number of locations (MSF, 2014a). This sentiment was echoed by MSF's 2015 review of its ebola response entitled *Pushed to the limit and beyond* (Medecins Sans Frontieres, 2015). This frame of being 'stretched thin' and the outbreak as 'unprecedented' conforms to McInnes' notion of the crisis narrative as focussing on huge numbers of people suffering and dying (Mcinnes, 2016). Through focusing on phrases like 'out of control' and the high number of fatalities, a sense of imminent threat was created which framed the 2013-2016 Ebola Crisis as a danger to global health security.

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[3]Even in the context of the 2013-2016 Ebola Crisis, National Institute of Allergy and Infectious Disease Director Anthony Fauci was asked whether Ebola could be used as a bioweapon by a journalist and responded that "nature is the worst terrorist" (Arter, 2014)

Following through with this logic, we see the cost of response ratcheting upwards each time a new estimate is released. Beginning with a WHO estimate on the 31st of July 2014 of USD100 million (World Health Organization et al., 2014), only four days later (3rd August 2014) the World Bank pledged USD200 million (World Bank, 2014). A UN Office For Coordination of Humanitarian Affairs (UNOCHA) resource requirements estimate a month later, September 2014, placed needs at USD988million (UNOCHA, 2014). By 2015, the *lowest* estimate of the impact on West African economies were losses of USD3.8billion, higher estimates topped out at USD32.6billion (World Bank, 2015). To put these estimates into perspective, the high estimates were 250% of the GDP of Guinea, Sierra Leone, and Liberia *combined* (World Bank, 2017). This exponentially rising cost of the outbreak falls in line with the linkages between health security and the economic logics employed therein that were explored in the previous chapter.

Over the course of the crisis, further descriptions of the crisis as 'a threat to security' and as 'unprecedented' continued. One particular example is the statement made by WHO declaring that the Ebola Crisis is a Public Health Emergency of International Concern (PHEIC) which describes "the largest EVD outbreak ever recorded" as constituting "an 'extraordinary event' and a public health risk to other states'" (World Health Organization, 2016b). This characterisation falls in line with prior framings as 'extraordinary.' A further move toward the perception of the Ebola Crisis as a security threat came at a UN Special Briefing on Ebola led by UN Systems Coordinator for the Ebola Response Dr. David Nabarro on September 2nd 2014. With a death toll of over 1000 persons already, Dr. Joanne Liu - International President of MSF - made the organization's first ever call for the deployment of *military* resources and called for 'States [to] immediately deploy civilan *and military* assets with expertise in biohazard containment'(Liu, 2014, emphasis added). Two weeks later, US President Barack Obama pledged 3000 troops to assist in responding to the outbreak.

The use of military force for support in responding to the 2013-2016 Ebola Crisis was not new at the time of the call. In a 2015 assessment of Civil-Military engagement in the response Ebola Crisis, Kamradt-Scott and colleagues (Kamradt-scott et al., 2015) found that the Sierra Leonean and Liberian militaries had already become involved; the Sierra Leonean military had even taken control of the National Ebola Response Center (NERC). What the MSF call did, however, was ratchet the crisis narrative up further and call for *foreign* military deployment. This call for foreign military deployment reinforced the narrative of the Ebola Crisis as an emergency requiring the use of all available international

resources because of its *global* consequences. This fits into the dominant narrative of 'global health security' wherein massive resources are required to combat threats on a *global* scale.

Another discursive move to securitize the Ebola Crisis and fitting it into this 'Global Health Security' narrative came from the leaders of Guinea, Sierra Leone, and Liberia. On September 15th, over a month after a PHEIC was declared, the rising cost, expanding complexity, and inflating case and death numbers led these leaders to submit a letter to UN Secretary-General Ban Ki-Moon. The letter spoke of the 'relative peace, security and stability in the sub-region' and stated that 'the epidemic has dealt a devastating blow to our efforts' (Condé et al., 2014). This letter stated that the epidemic threatened to plunge the states back into the conflict that consumed them in the late-20th and early-21st Centuries. This claim placed the very peace and stability of the three most affected countries - a population totalling 24.4 million - in the hands of the response to the mounting epidemic.

Three days later, the UN Security Council passed resolution 2177 which focussed on the isolation of the countries and the travel and trade bans instituted by other countries (UNSC, 2014). In addition to this, the UN Mission for Ebola Emergency Response (UN-MEER) was established. This mission was the first full UN Mission established in response to an epidemic. As seen in the previous chapter, UNAIDS was the first UN organization created for a disease outbreak. What is different here is the clear signal of emergency that creating a full UN Mission sent. Historically, UN Missions had mostly been created for peacekeeping and civil conflicts. This mission, however, was for the response to an epidemic. The linking of peacekeeping and failed states with an outbreak of infectious disease signalled that WHO's centrality and authority had failed in this outbreak.[4] Additionally, this epidemic had been raised to another level. UNAIDS, an organization created in response to an ongoing pandemic spanning almost four decades wasn't itself a full mission linked to peacekeeping. The Ebola Crisis, however, had even greater response and impact, pushing it even further up the agenda and warranting a full UN Mission.

This securitization was not just a discursive phenomenon at a global level. A large amount of fear and stigma around EVD swirled around at the community level, both in affected countries and around the world. In the affected countries, a large amount of fear for personal safety and rumours that hospitals and clinics were locations where individuals contracted EVD circulated reducing community proclivity to seek care (Wilkinson and Leach, 2014). In addition to this, the fear and stigma created tensions and sparked a

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[4]This is also a point made by Interviewee 041, a report author, and will be explored in a later section of this outline.

number of scenes of violence; including a team raising Ebola awareness in the village of Wome in Southern Guinea being attacked and killed with machetes and clubs (BBC News, 2014). This explosion of violence was not an isolated incident and led His Excellency Ernest Bai Koroma, President of Sierra Leone, to institute a three-day curfew during which health teams went door-to-door to raise awareness, recruit community activists, and provide advice on home-care (Koroma, 2014).

Community fear was not limited to the three most affected countries. In the United States, fear of EVD created a number of difficulties as policymakers and officials acted counter to public health rationales due to public pressure. In particular, a number of states issued mandatory 21 or 42 day quarantines on Healthcare Workers returning from West Africa (Brown et al., 2014) or even prohibiting entry altogether (The Guardian, 2014). This had at least two clear effects: first, it discouraged volunteers from going to West Africa to help with the response because they were going to be placed in such a mandatory quarantine and even risk losing their job (Garrett, 2015b). Second, it created large questions around civil liberties and the *quality of care* inherent in quarantine[5] - particularly when the risk of transmission prior to becoming symptomatic was negligible (Miles, 2015).

The policy and media debates surrounding the Ebola Crisis, then, ere dominated by a narrative of global health security. First, through its initial characterisations as an exceptional and 'unprecedented' public health event; second, through the emerging discursive response to the outbreak from the UNSC, WHO, MSF, and the Presidents of the three most affected countries; and finally, through the community level responses to the outbreak characterised by fear and anxiety both within the three most affected states and in developed nations. The next section will demonstrate that, while the outbreak fit into this dominant narrative, the three main methods for responding to outbreaks - WHO authority, medical countermeasures, and surveillance - were absent, ineffective, and late in the response to the Ebola Crisis.

5.2.2 Failing to ameliorate insecurity

As shown in the previous chapter, three methods have been lauded above all others as the primary means by which the damage from outbreaks can be mitigated. First, the use of surveillance allows for a fast-twitch response which can contain and eliminate a pathogen in a population before it has chance to cause extensive damage. Second, empowering

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[5]This was a particularly difficult conversation to have when the quality of care disparity between the US and West African patients was already a contentious issues.

WHO to coordinate and act on the behalf of states and to bolster country capacities to respond allow for more comprehensive and more successful responses. Finally, the rapid production of medical countermeasures - vaccines, therapeutics, and biomedical diagnostic technologies - along with rapid production of data and information in order to develop such technologies can allow for simultaneous treatment, containment, and prophylaxis against a particular pathogen. The aim of this section is to elaborate further on the Ebola Crisis and demonstrate that each of these three methods, lauded as solutions to global health insecurity, failed in this context.

Surveillance

This section begins with surveillance because, in most outbreak responses, this is the first step. To respond to an outbreak, it is first necessary to know the outbreak is there - even if the causative agent is not yet known. The spike in a particular set of symptoms in patients can indicate an outbreak. The index case for the Ebola Crisis, as above, was a young boy in Meliandou, Southern Guinea who seemingly contracted Ebola from a hollow tree in which fruit bats were roosting.[6] In December of 2014, the boy died and in the ensuring months the village of Meliandou buried 14 further residents (Garrett, 2015a). As residents of Meliandou, along with healthcare workers treating the sick, moved throughout the country to Monrovia (the Guinean capital) and across Guinea's porous borders with Sierra Leone and Liberia, the epidemic that would spiral into a full humanitarian crisis had begun.

Although the story of the Ebola Crisis begins in December of 2013, it isn't until March of 2014 that the ebola virus is detected and a laboratory confirmation is made for the first cases (Wilkinson and Leach, 2015). This gap of *three months* meant that by the time an ebola case had been confirmed, the epidemic had already spread to Liberia and Sierra Leone and would be laboratory-confirmed less than a week after (Centers for Disease Control and Prevention, 2016). The reasons behind this are multifaceted because surveillance requires multiple factors; diagnosis, detection, and reporting. In the first instance, patients must be diagnosed with disease; clinical symptoms must be read and a viral haemorrhagic fever needs to be concluded. In many cases during this outbreak the early clinical symptoms of fever, aching, and lethargy were mistaken for malaria, a disease which is endemic to the countries most affected by the outbreak. Some patients didn't present with symptoms at all (sub-clinical presentation). This becomes important later

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[6]Although this now commonly held belief is not uncontested.

in the epidemic when Ebola patients needed to be diagnosed quickly to isolate them away from patients who have other, similarly presenting diseases.

For those cases which were diagnosed or progressed to the later stages of clinical presentation (e.g., epistaxis, excessive bleeding, dehydration), a laboratory confirmation of EVD is necessary. In the case of EVD, multiple similar viral haemorrhagic fevers (VHFs) are possible diagnoses with different case fatality rates. Additionally, Marburg fever also belongs to the same genus of viruses (filoviridae) so a microscopic analysis cannot accurately differentiate the two. To positively differentiate between these different types a reverse-transcriptase Polymerase Chain Reaction (rtPCR) test is applied to detect the RNA-type and positively identify EVD (CDC, 2015). This was particularly difficult during the Ebola Crisis for three reasons; lack of lab capacity, lack of human capacity, and lack of basic infrastructure (Coltart et al., 2017). Firstly, rtPCR requires complex, expensive technologies like a thermocycler[7] as well as reagents; these existed in some laboratories throughout West Africa but often patients and samples had to be transported to central labs before they could be tested (Coltart et al., 2017).

This brings us to the next two issues with detecting EVD; insufficient human capacity and lack of basic infrastructure. Not only must a laboratory have the technological capacity and infrastructure but the personnel in that lab need to have the tacit knowledge and technical expertise to prepare samples, use the technologies, and interpret the results. This human capacity was overwhelmed in West Africa; as the flow of samples to limited laboratories increased, backlogs built up and this limited capacity was quickly occupied, creating a "major bottleneck in the ability to respond to Ebola" (Whitty, 2017, p.3).

All of this, however, assumes that samples can get to the laboratory. A lack of basic infrastructure hampered simply getting the samples and patients to the laboratories and treatment centres (Koch, 2016a). During the outbreak, contact tracers (individuals tasked with finding, interviewing, and monitoring people who have come into contact with ebola cases) were hampered by roads that "were at best minimally maintained" (Koch, 2016b, p.292) and the IHR Review Committee noted that "basic infrastructure, such as safe running water, reliable electricity and roads, is often lacking" (IHR Review Committee, 2016, p.25).

Finally, the cases not only have to be diagnosed and detected but then must also be reported for surveillance to work. In this case, EVD cases must be reported to national

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[7]A thermocycler is used to vary the temperature in a controlled and ordered manner as well as introducing reagents and buffers at the correct points in the cycle such that DNA/RNA can be amplified for further testing and sequencing.

governments and WHO as per the revised International Health Regulations (World Health Organization, 2005). In many cases, however, this was disincentivised by the fear at a national level that reporting a major outbreak would cause states to issue travel and trade restrictions as was seen in SARS (Fidler, 2004). This fear proved correct; by November 2014, over 27 countries had placed travel and trade restrictions on people and goods coming from West Africa (World Health Organization, 2015e). In addition to the fear of repercussions, the lack of basic communications infrastructure (reliable internet and electricity) also imepeded notification of EVD cases (Fink-Hooijer, 2015; Forrester et al., 2014; Cori et al., 2017). This lack of basic infrastructure, lack of human capacity, and lack of technology, then, contributed to the almost three-month gap between the first case and its notification - severely weakening the fast-twitch surveillance around which the dominant response paradigm is arranged.

Reinforcing this, a comparison can be made between the initial notification of EVD in March 2014, and the diagnosis of the first case on US soil in September 2014. Thomas Eric Duncan had returned from Liberia on September 19th and began exhibiting symptoms on September 24th. What is important about this story, however, is timing; Duncan was admitted to Texas Health Presbyterian Hospital on September 28th and EVD was laboratory confirmed two days later (Anderson-Fletcher et al., 2017). This was possible because the US has basic infrastructure in order to transport and analyse samples, indeed many hospitals in the US have their own laboratories in which to perform the necessary analyses. This comparison illustrates the wild disparity between the global north and the global south in terms of diagnostic and surveillance capacity - a disparity that continues in response, treatment, patient care, and health systems in general (Wilkinson and Leach, 2015).

WHO Authority

As seen in the previous chapter, one of the central tenets of outbreak response in the 21st Century has been a bolstering of WHO's authority and centrality in response activities - including in regard to surveillance and reporting. Through the revisions of the International Health Regulations in 2005 and normative authority building throughout the 21st Century,there was an increasing expectation created that WHO would respond to major outbreaks and provide support. This section will outline how this was not necessarily the case during the Ebola Crisis.

As noted earlier, between March and June of 2014 MSF had been calling the ongoing

outbreak 'unprecedented' and 'out of control' but WHO had not acted. This was primarily because of a temporary reprieve in case numbers seen in early May of 2014 (Sack et al., 2014) in which case numbers had been steadily declining and no new patients were seen in Conakry for 10 days. With hindsight, this slump has now been attributed to a burgeoning fear of health care centres and rise in home-care of cases rather than a reduction in transmission rate (Wilkinson and Leach, 2015) but at the time cases appeared to be abating.

As case numbers surged again in June and July of 2014, MSF's International President Joanne Liu urged WHO's Director-General Margaret Chan to call a PHEIC. As reported in *The Guardian*, "'You have the legitimacy and authority to label it an emergency ... You need to step up to the plate'" said Liu (Boseley, 2015b). Internal documents from WHO would later reveal that calling a PHEIC was resisted because of the likely economic damage it would create for the three most affected states, Dr Chan even noting that declaring a PHEIC "could be seen as a hostile act ... and could hamper collaboration" (Garrett, 2001, p.95). Only on August 6th did DG Chan convene an Emergency Committee and a PHEIC was finally declared on August 8th - *five months after the first reported case.* This late reaction to an spiralling crisis came in the same month that the death toll crept up above 1000 (Centers for Disease Control and Prevention, 2016).

The lack of WHO action led UN Secretary-General Ban Ki-Moon to address the mounting crisis and outline three urgent steps to be taken in response (Ban, 2014). First, the lack of capacity in the three most affected countries was to be addressed. Second, a holistic UN System response was to be mounted, headed up by UN Systems Coordinator for Ebola Virus Disease, Dr. David Nabarro. Finally, UNMEER was to be established; a full UN mission to respond to the outbreak revealed not only the scale, scope, and magnitude of the outbreak, but it cast significant doubts over WHO's handling of it. As put by David Fidler "The UN stripped WHO of leadership in creating the UN Mission for Ebola Emergency Response" (Heymann et al., 2015, p.1888). The Ebola Crisis, now, had grown outside of WHO's remit and become a full-scale humanitarian crisis.

WHO's central authority, however, was not just undermined by its lack of action in the early stages of the outbreak; it also extended to issues in the midst of the outbreak with problems similar to that of the H1N1 outbreak prior. In a statement after its first meeting on August 8th 2014, the IHR Emergency Committee recommended that states *should not* institute travel and trade restrictions (World Health Organization, 2014b). In spite of this, however, 27 countries issued restrictions on trade and travel, including the

mandatory 21 day quarantine implemented by some US States (Thompson and Torre, 2014). Australia went a step further on the 28th October and instituted a freeze on all temporary visas coming from West Africa and instituted a three week quarantine on permanent-visa holders (The Guardian, 2014).

In addition to this, private companies also restricted their activities and private airlines stopped servicing the area. This lack of private servicing of the area created issues with importing foreign aid; few airlines would fly into West Africa and even fewer pilots would fly for them despite the risk of contracting EVD as a pilot being negligible (Gomes et al., 2014). The lack of transport also created issues for moving volunteers into and out of West Africa as volunteers had very few options in terms of getting to the area to help patients and if they were able to get there, few organizations would send them without a plan in place for medical evacuation (Gomes et al., 2014).

This direct contradiction of the authority of the International Health Regulations was an additional blow to the authority of WHO and further evidence that the expectation of WHO's centrality to response may not be the reality. Furthermore, the IHRs do not extend to private organizations, only to states parties, and as such even if WHO had exercised its authority to states it could not extend this authority over private organizations. This demonstrates that, while WHO's central directing and coordinating role may be normatively entrenched, in reality WHO lacks the organizational will and operational capacity to fulfil the role expected of it.

Medical Countermeasures

From the start of the outbreak, the lack of medical countermeasures impeded response. No vaccine for EVD had been approved for use, no therapeutic agent or antiviral agent was available to treat patients, and the diagnosis was still done through clinical presentation and an expensive rtPCR which takes time and human capacity (Roemer-Mahler and Elbe, 2016). Additionally, at the time of writing, no rapid-diagnostic, vaccine, or therapeutic has been fully approved for use outside of clinical trials (WHO, 2015b). Throughout the outbreak, clinical trials for all three of these categories had been implemented but their absence in the beginning stages demonstrated a weakness in the Global Health Security paradigm's reliance on biomedical technologies.[8]

During the outbreak, a number of vaccines, therapeutics, and rapid diagnostics were

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[8]In the words of Interviewee 003 (former UK Armed Forces, an Advisor recruited by the African Governance Initiative) "The way to deal with this from the very outset was never going to be a medical response, this was going to be procedural"

licensed for emergency use and a number of clinical trials began to test their efficacy and safety. First, however, an ethical framework for running clinical trials in a public health emergency had to be considered.[9] In order to do this, WHO's Ethics Working Group met on three occasions (11th August 2014, 3rd September 2014, and 20-21 October 2014) and produced a document entitled *Ethical issues related to study design for trials on therapeutics for Ebola Virus Disease* (WHO Ethics Working Group, 2014). The first meeting of this group on the 11th August, just three days after the outbreak was declared a PHEIC, demonstrates how immediate a need for pharmaceutical intervention is in the current response logics.

This document outlined five areas for consideration[10]:

- **the contextual site**; in the context of a public health emergency, the emergency use of unlicensed therapeutics had already been deemed ethical on the condition that data from their use is shared. Additionally, the report mentions local context, primarily the availability of human capacity and research personnel at the site as an important ethical considerations; establishing a clinical trial should not usurp resources (human or otherwise) that would be used for treating patients.

- **the design of the study**; most clinical trial designs were deemed ethical, but it was noted that trade-offs exist between the generalizability and validity of the study and the likely acceptance of a placebo-controlled study in affected communities.

- **the community location**; clinical studies need to engage with local ethics committees, review anthropological evidence, and liaise with local populations in order to gain community acceptance and ensure ethical conduct.

- **participants in the study**; central to ethical conduct in this area is informed consent, this is additionally important when concerning vulnerable populations and in following up with participants - individuals in this context want to see the results of their participation and how it can benefit their community.

- **healthcare workers and researchers**; the study design in the context of Ebola should also recognise the risks posed by increased patient contact, particularly if the trial places strain on resources and requires multiple uses of sharps which can pierce personal protective equipment.

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[9]It is worth noting that the Declaration of Helsinki and the Council for International Organizations of Medical Sciences (CIOMS) have both produced international guidelines on the ethics of conducting clinical trials.

[10]List adapted from WHO Ethics Working Group (2014)

After this production of ethical guidelines, WHO began authorising the establishment of clinical trials in West Africa. This authorisation of trials led to a great deal of public attention as experimental treatments were lauded as 'miracle drugs' (Ashton, 2014; Brown, 2014). This public narrative runs counter to the reality that few, if any, of the experimental treatments would have been certified for widespread use during the 2013-2016 Ebola Crisis.

Following this, two candidate vaccines were approved for emergency use: chimpanzee adenovirus serotype 3 (Chad3) and recombinant vesicular stomatitis virus (rVSV). The first, Chad3, was administered by GlaxoSmithKline to 10 US patients as part of a Phase 1 (safety) trial in early September 2014 - this was concurrent with a 60-person trial in Oxford which began on 17th September 2014. The phase 1 trial demonstrated clinical safety and its immunogenicity was on par with rVSV, whose trial results were published earlier than the 2016 publication produced detailing this trial's results (Ewer et al., 2016).

The rVSV vaccine trial was conducted in Guinea between 1st April 2015 and July 20th 2015 and immunised the contacts of confirmed EVD cases in two waves; one immediate and one delayed (21 days). The results from the trial demonstrated a 100% efficacy, however the data was weakened by limited case numbers in the unimmunised and delayed vaccination populations (16/7651) despite zero cases in the vaccinated populations (Henao-Restrepo et al., 2015).

These trials, although demonstrating at least some development towards the production of medical countermeasures, were by no means rapid. The rVSV Phase 3 trial (large-scale clinical efficacy and safety trials) began its pilot in March 2015 (?), by which point, EVD cases had already been in decline for 3-4 months (Shultz et al., 2016).

The same can be said of clinical trials for therapeutics. The most prominent example of an Ebola therapeutic is ZMapp, a monoclonal antibody therapy developed by Mapp Biopharmaceuticals Inc. Results from the clinical trials were promising (a 40% reduction in mortality) but the enrolment of 72 persons (36 in treatment and 35 in control groups) means that results are not statistically significant nor are they generalisable. The primary reason for this lack of enrolment is that the trial began in late 2015 during which time Liberia (the location of the trial) was declared ebola-free by WHO (LeafBio, 2016).

On the diagnostics side, the ReEBOV point-of-care diagnostic kit produced by Corgenix, was tested in early February 2015 and found to be 100% sensitive (0% false negatives) and 92% specific (8% false positives) from a sample size of 102 (Broadhurst et al., 2015).

What many of these countermeasures have in common is that they took place as cases

were *declining.* The reasons behind this are multiple and rooted in the complexities of ethical clinical research in crisis. What these examples drive home however, is the lack of availability of biomedical countermeasures for responding to the Ebola Crisis. Not only were the countermeasures absent in the beginning stages but many clinical trials weren't set up until the peak of the outbreak had passed. As put by MSF International President Joanne Liu "Over the last few decades R&D has failed to save lives. It is not fit for purpose." (Boseley, 2016, p.861)

5.2.3 Summary

The Ebola Crisis, then, followed the dominant 21st Century framing of Global Health Security (Mcinnes, 2016). It was constructed as a security threat through an initial characterisation as 'unprecedented', a discursive response from the UNSC, WHO, MSF, and others, and through a community response characterised by fear and stigma. In addition to this, the three methods of ameliorating insecurity that have dominated 21st Century response - widespread syndromic surveillance, empowering and bolstering WHO authority, and rapid production of biomedical countermeasures - were absent or ignored during the outbreak. The surveillance was delayed due to weak health systems and then not responded to, WHO did not exercise its authority or fulfil what was expected of it, and biomedical countermeasures did not exist at the outset of the outbreak and were beset by ethical constraints on their clinical testing.

Even in the dying days of the outbreak, on November 20th 2015, a case of Ebola was confirmed in Liberia which ended the 'ebola free' designation for the second time. This case arrived *haemorrhagic and contagious* into a hospital in Liberia from which he was moved to a Children's ward and *two days later* was diagnosed with Ebola. This single case produced 157 new contacts, all of which had to be monitored for a further 42 days before Liberia could be declared 'ebola free' again. This came primarily because the patient did not present with a fever and so Ebola was not suspected at first - this limitation to diagnosis often seen early in the outbreak reflecting how little of the ramped up response had remained in-country for use in development and bolstering the health system.

In short, despite being framed as exceptional, the Ebola Crisis fit into the trend described in the previous chapter; a threat to security to be dealt with in the traditional manner. These traditional methods of response, however, were found wanting during the crisis. The next section explores the document analysis performed in order to delineate the lessons codified in the academic literature, grey literature, and a set of 40 documents

identified by WHO as informing policy. This document analysis will attempt to answer the question of 'what knowledge was codified from Ebola?'

5.3 The Ebola Crisis: Lessons Learned

The previous section demonstrated how the Ebola Crisis challenged some of the central tenets of the Global Health Security paradigm that was argued in Chapter 4. As we saw in Chapter 2, a paradigm establishes directions to pursue and neglect as well as creating an exclusion effect on certain types of evidence (Dosi, 1982). Furthermore, paradigmatic knowledge production was seen as establishing a base of assumptions upon which particular avenues can be pursued (Kuhn, 1970). This section will demonstrate that codified knowledge produced in the wake of the Ebola Crisis was broadly focused on Communication, Community Involvement, and Health Systems Strengthening. This section will also show, however, that lessons in these three areas were relatively superficial and that lessons within the Global Health Security paradigm (GHSp) were examined in much more depth. This supports the argument that the GHSp filters knowledge accumulation and primes GHSp-centred lessons for development, while lessons outside the GHSp remain less deeply understood.

As described in Chapter 3, a total of 267 documents were analysed in three samples: Academic (n=161), Operational (n=62), and Policy (n=34). Each of these samples was designed to represent the lessons that each of the three different samples had identified from the Ebola outbreak. This section presents the findings from these data to try and examine *who* is learning *what* from the Ebola Crisis.

5.3.1 How the most referenced lessons are discussed

As we saw in Chapter 2, the *who* of a paradigm is just as important as the what - the community which shares the ideology, values, or assumptions are an equally important factor of a paradigm as the ideology, values, or assumptions themselves. This section explores not only the *what* of the knowledge codified but also *who is codifying them.* This section begins by describing the knowledge codified across all three samples, then the section will analyse the various samples' codified knowledge to demonstrate *who* is codifying *what*?

The entirety of the first-pass inductive analysis produced 151 distinct categories of lessons. The second iteration then consolidated these into 146 categories. Once aggregated, these 146 categories were sorted into 54 parent categories. The ten most frequent lessons are presented in table 5.1 and the ten least frequent lessons are presented in table 5.2. In analysing these documents, *functional lessons learned*[11] were identified and clustered

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[11]See chapter 3, page 53 for full details.

together into similar epistemic categories.   Tables 5.1 and 5.2 demonstrate, in Dosi's

Ten **Most** Codified Lessons by Number of Times Cited *(n= number of times a lesson was codified)*	Ten **Most** Codified Lessons by Number of Documents Citing *(n= number of documents codifying a lesson at least once)*
Communication *(n=39)*	Communication *(n=33)*
Community Involvement *(n=33)*	Community Involvement *(n=28)*
Health Systems Strengthening *(n=28)*	Health Systems Strengthening *(n=25)*
Lack of Compliance with IHRs *(n=28)*	Vaccines *(n=22)*
Coordination *(n=26)*	Training *(n=22)*
Training *(n=24)*	Surveillance *(n=20)*
Vaccines *(n=23)*	Coordination *(n=18)*
Personal Protective Equipment *(n=21)*	Health Emergency Reserve Force *(n=18)*
Surveillance *(n=21)*	Infection Control *(n=18)*
Health Emergency Reserve Force *(n=19)*	Early-warning Surveillance *(n=18)*

Table 5.1: Table showing the 10 most frequent 'lessons learned' across the sampling frames based upon the total number of references to the lesson and the total number of documents referencing a lesson.

Ten **Least** Codified Lessons by Number of Times Cited *(n= number of times a lesson was codified)*	Ten **Least** Codified Lessons by Number of Documents Citing *(n= number of documents codifying a lesson at least once)*
Structural Transformation *(n=1)*	Structural Transformation *(n=1)*
Outbreak Risk Assessment *(n=1)*	Outbreak Risk Assessment *(n=1)*
Epidemiological Mapping *(n=1)*	Epidemiological Mapping *(n=1)*
Epidemiological Modelling *(n=1)*	Epidemiological Modelling *(n=1)*
Treatment *(n=1)*	Treatment *(n=1)*
WHO Accountability to Civil Society *(n=1)*	WHO Accountability *(n=1)*
IHR Review Conference *(n=1)*	IHR Review Conference *(n=1)*
Reporting Smaller Outbreak *(n=1)*	Reporting Smaller Outbreaks *(n=1)*
WHO Engaging Member States *(n=1)*	WHO Engaging Member States *(n=1)*
Zoonotic Risk *(n=1)*	Zoonotic Risk *(n=1)*

Table 5.2: Table showing the 10 least frequent 'lessons learned' across the sampling frames based upon the total number of references to the lesson and the total number of documents which reference a lesson.

([1982](#)) paradigm terms, the directions pursued and neglected by those codifying knowledge.

Looking at the lessons themselves, we can see that Communication, Community Involvement and Health Systems Strengthening are the most often referenced lessons. We proceed to explore each of these three lessons in terms of what they are and how different samples explore them in different ways.

Communication

Communication is a frequently cited lesson across most crisis types (Pollock, 2013). Lessons categorised under communication can range from the messaging of public communication ("it is crucial to examine what the public knows about Ebola and how the media's choice of terminology affects the public" (Gesser-Edelsburg et al., 2016, p.672)) to lessons on the infrastructure of communications in-country ("Knowledge of prevailing communications network coverage and use ... particularly in countries where network coverage, phone ownership and electricity supply are not universal" (Assessment Capacities Project (ACAPS), 2015, p.4)). At first this may seem broad, but considering that this is compared to categories with the breadth of covering all lessons pertaining to WHO it is comparatively small.

What is more interesting is the divergence among the ways in which communication is discussed in the three samples. In the first instance, we can note that the discussions around communication is heavily weighted towards the academic and policy samples. The academic sample has 20 references over 17 documents , and the policy sample has 13 references over 10 documents, compared to the operational sample's 5 references over 5 documents. This demonstrates a clear focusing by the policy and academic samples on Communication despite the operational sample's relative apathy.

This is further reinforced and clarified by the co-occurrence network data which demonstrates a broad citing of communication lessons with a variety other lessons. Figures 5.1, 5.2, and 5.3 show co-occurrence networks for each of the three samples. In these diagrams, each node is a category of lessons and each arc represents the number of times that lessons occur together in the same document. These networks are ego-networks for communication, meaning that they include only the Communication node and the nodes directly tied to it. This demonstrates the lessons that occur with communication in the three different samples.

Beginning with the academic sample, Figure 5.1, we can see communication at the midway point between the densely connected top layer and a more sparsely connected

bottom layer. The first point of note is the large number of lessons which the academic sample connects to communication. Second, the thickness of each connection between lessons is proportional to the number of times in which they co-occur. Looking at the thicker lines in Figure 5.1 we can see that the academic sample often connects communication with Community Involvement and Public Engagement/ Education.
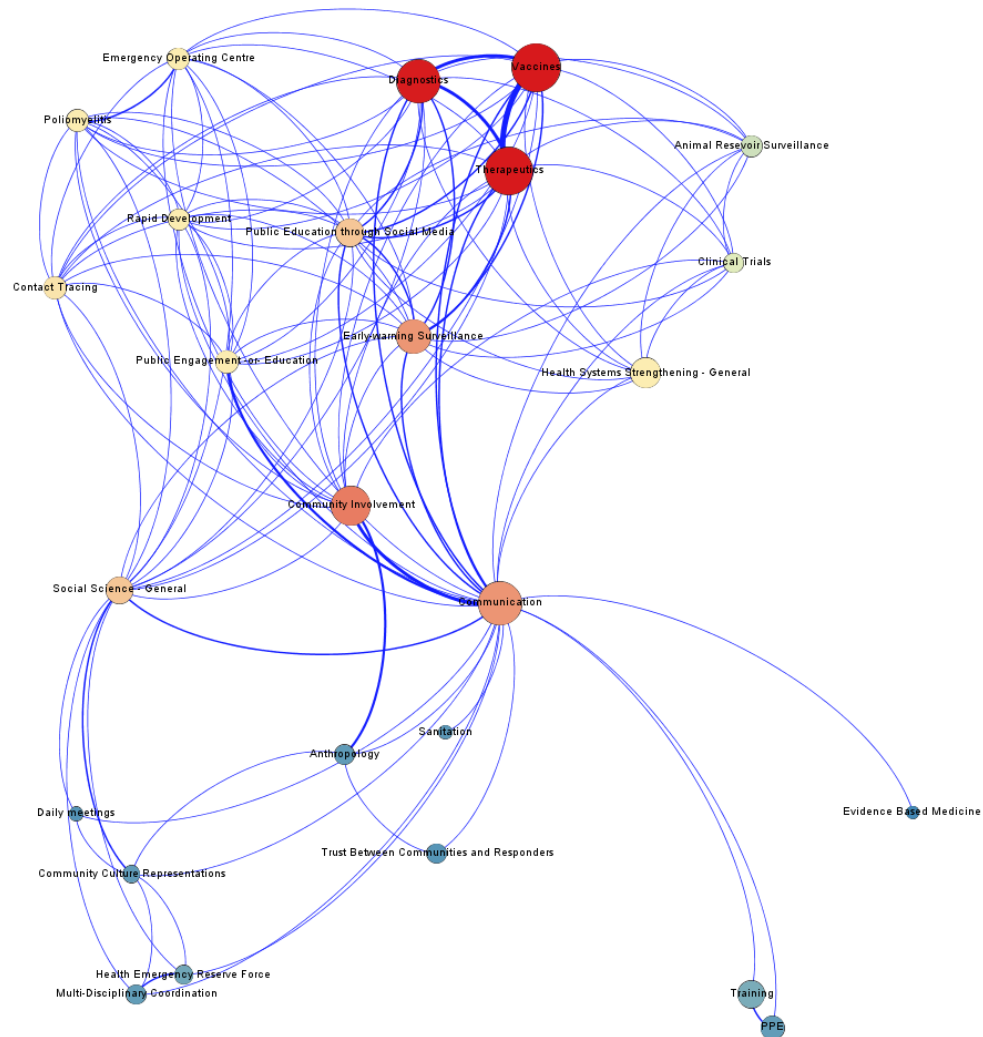

Figure 5.1: Communications Ego-Network for the Academic Sample

Figure 5.1 shows us that the academic sample frequently discusses communication in context with other lessons. One example from the academic sample states:

"Understanding cultural values and traditions is an essential component of infectious disease risk communication. Anthropologists, sociologists, psychologists, and other social scientists may play an important role" (Jacobsen et al., 2016, p.209).

Communication in this case requires multiple facets including cultural awareness, risk assessment, and the inclusion of social scientists in responses. This demonstrates a complexity of understanding communication in the academic sample.

Next, looking at the Policy document sample in Figure 5.2, we can see a sudden and sharp drop in the number of lessons with which communication co-occurs. Here we see that communication for the policy sample is linked with training and with risk frameworks. This indicates two things: the high importance of communication for training and risk assessment in policy documents; and that communication is often a stated aim in and of itself in the policy sample.
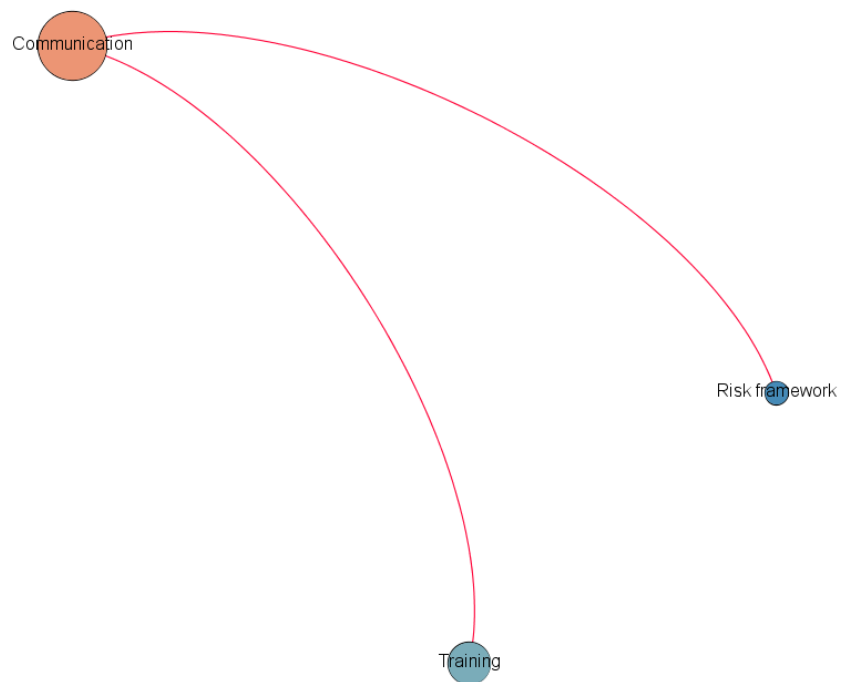
Figure 5.2: Communications Ego-Network for the Policy Sample

One example of communication being an aim itself is this lesson from a policy document below:

> "Starting health promotion efforts early and linking them to local communic-
> ation directly improves programme effectiveness." (Adams et al., 2016, p.12)

Making communication a stated aim was also part of the Ebola Interim Assessment Panel's report, an embedded case that we will see in the next chapter:

> "Although an emergency media team was put in place to manage WHO's
> messaging and content, the communication strategy was not able to counteract
> the very critical reporting on the work of the Organization." (World Health
> Organization, 2015e, p.21)

Next, turning to the operational sample, we see communication again has very few connections. In this case we see social media as the sole connection to communication for this operational sample. This again shows us the limited ways in which operational documents refer to communications, either commenting on social media as a tool or commenting on communications more generally.

One example of this type of lesson in an operational text is below:

> "Many communities in these counties reported a lack of telephone coverage,
> making it difficult for community leaders to notify county health teams about
> suspected Ebola patients, to arrange a clinical evaluation, or to receive labor-
> atory test results in a timely manner. Because of poor connectivity, workers
> in Rivercess County reported driving 6 hours round-trip to the next county to
> send surveillance reports to the Ministry of Health and Social Welfare over the
> Internet." (Summers et al., 2014, p.1202)

In this, we can see the very *practical* focus of operational lessons as compared to the abstract focus of the academic sample. This highlights the general view of academic documents versus that of policy and operational documents' goal-orientation.

Community Involvement

Community Involvement generally refers to lessons which discuss the role that local populations and communities play in response efforts. These lessons ranged from notions of bottom-up community engagement where communities are participating in organising, planning and leading response efforts to communities being discussed as a barrier to 'proper' public health techniques. For example, one bottom-up recommendation discusses how local communities found their own means for infection control:
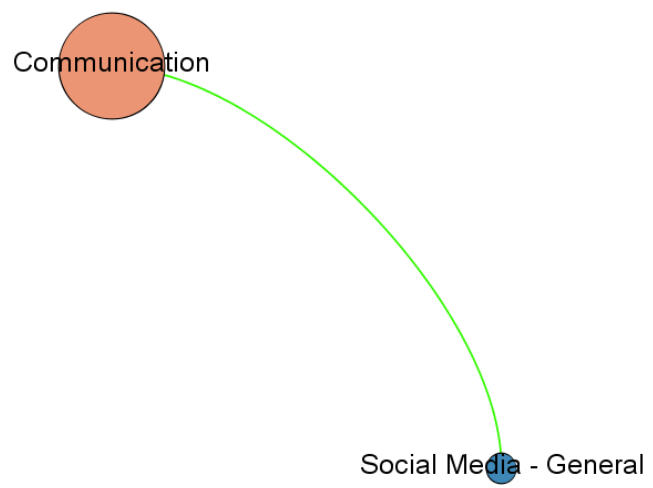
Figure 5.3: Communications Ego-Network for the Operational Sample

"Most of those ways, in fact, are best found not by foreign experts but by people living in their own communities. One woman in Liberia who treated many of her sick neighbors was able to protect herself using plastic bags and other household items. Villagers and urban slum dwellers have found ingenious ways to enforce self-quarantines. In one village, guests were warmly welcomed and then instructed to sit in a chair near the road, while the friend or relative they came to see sat on another chair a few feet away." (D'Harcourt, 2015)

On the other hand, one document discusses communities in a more top-down manner:

"In Monrovia, for example, sociocultural traditions and beliefs hampered implementation of safe burials and of the order for cremation of all cadavers that was in force for several months. Tragically, community resistance resulted in death or injury for some responders in Guinea" (Lo et al., 2017, p.364)

This distinction between the bottom-up and top-down methods of is a source of debate when it comes to the Ebola crisis because, as above, some see communities as barriers to 'proper' containment and response while others saw communities as a source of knowledge and capacity (Wilkinson and Leach, 2014). This is not necessarily a new debate, however. As Leach and Scoones (2013) note, communities are often left unacknowledged or viewed as a barrier, despite their role in controlling many Ugandan and Congolese ebola outrbeaks in the past (Hewlett and Hewlett, 2008).

The differences across the three samples here is similar to that for communication. We see much more instrumental and goal-oriented community involvement lessons in policy and operational documents compared to much more evaluative and discursive lessons from the academic documents.

This is again reinforced and clarified by the co-occurrence network data which demonstrates a broad citing of community involvement lessons with a variety other lessons. Figures 5.4, 5.5., and 5.6 show the ego-networks for community involvement in the three samples.

Looking first to the academic sample in Figure 5.4, we can see again that a great number of different lessons. Looking at connection thickness (proportional to frequency of connection) we see that the most common connection for community involvement is anthropology (at the bottom of the network). This makes sense given the strong alignment between anthropologists' involvement in the response and the need to engage communities during the Ebola crisis.
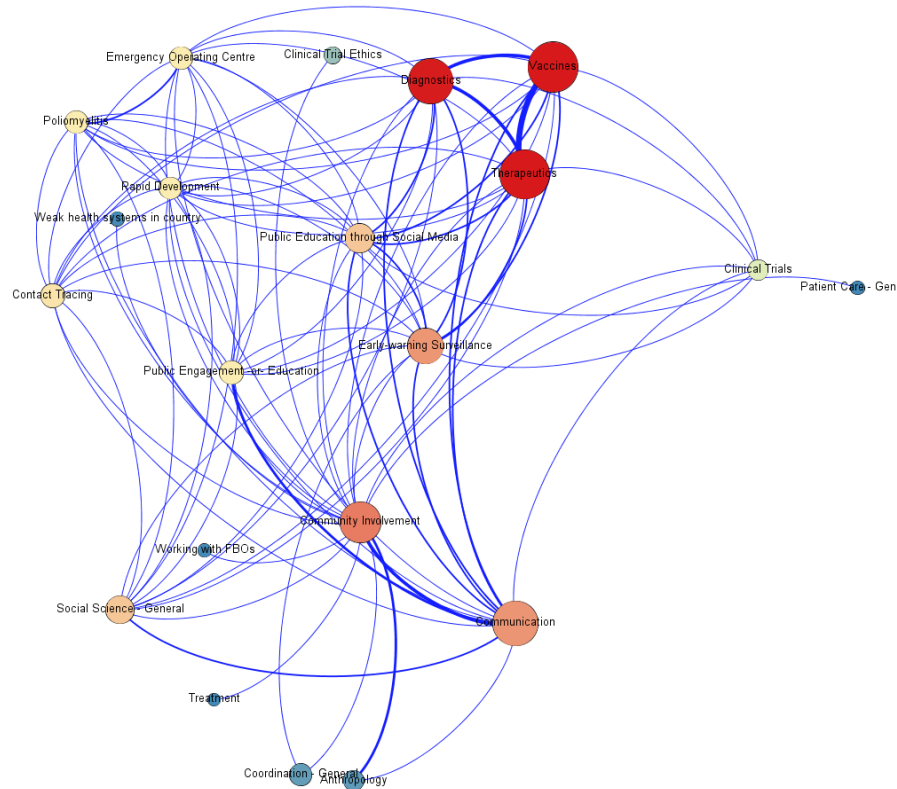
Figure 5.4: Community Involvement Ego-Network for the Academic Sample

Looking next to the policy sample in Figure 5.5, we see more connections here than we did with communications. Notably we see a strong linkage between community involvement and health systems strengthening in the policy sample. We also see linkages with patient isolation, surveillance, sanitation, and a dearth of healthcare workers in-country. What this may mean for our purposes is, first a general acknowledgement of the role that communities play in strengthening their own health systems, or second a general superficiality to lessons discussing communities and health systems strengthening. Looking at an example of this connection made by the European Parliament, we can see how community involvement is invoked as part of a crisis-response vision for health systems:

> "building a resilient health system over the long term requires, inter alia, (i) investing resources in basic public health services, (ii) ensuring safe and quality care by increasing resources to train, supervise and pay health workers adequately and by giving access to safe drugs, (iii) engaging local stakeholders and communities in crisis response and development planning" (European Parliament, 2015)
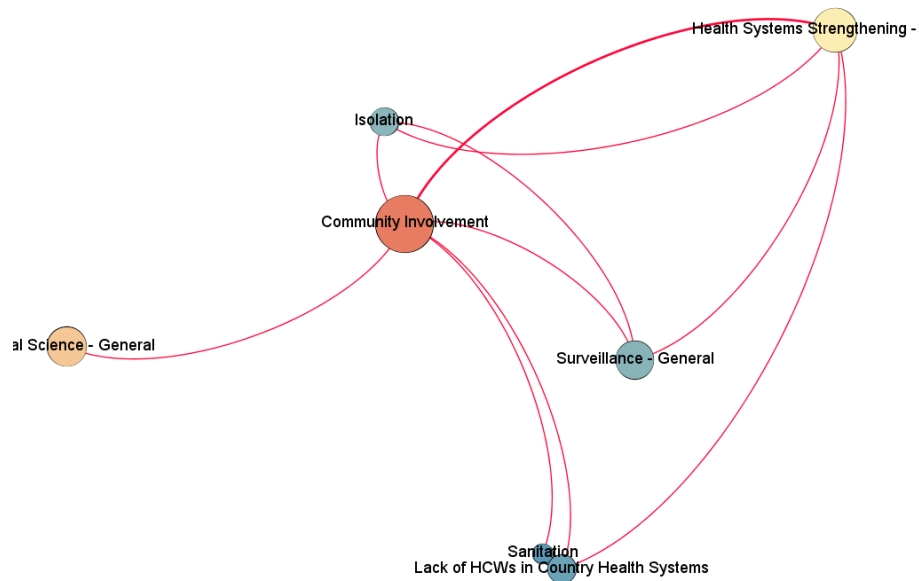
Figure 5.5: Community Involvement Ego-Network for the Policy Sample

Moving to the operational sample we can see that community involvement is tied mainly to early-warning surveillance and rapid response. This again provides us with the same options; community involvement is often discussed in the abstract or is tied to these two particular concerns of the operational sample.

Looking to an example of this, we can see how community involvement in response is linked to faster detection and containment.

> "Active surveillance was combined with outreach and community education from surveillance officers regarding the importance of reporting deaths and raising alerts. The faster response to alerts resulted in early isolation of patients and initiation of quarantine, which limited community spread. Increasing the number of district surveillance officers made early detection and containment possible" (Sandi et al., 2017, p.91)

While in the operational example we see the linking of communities within the direct, operational response, we can see much more wide-ranging community involvement benefits from the academic examples. Again, we see policy and operational documents being much

Figure 5.6: Community Involvement Ego-Network for the Operational Sample
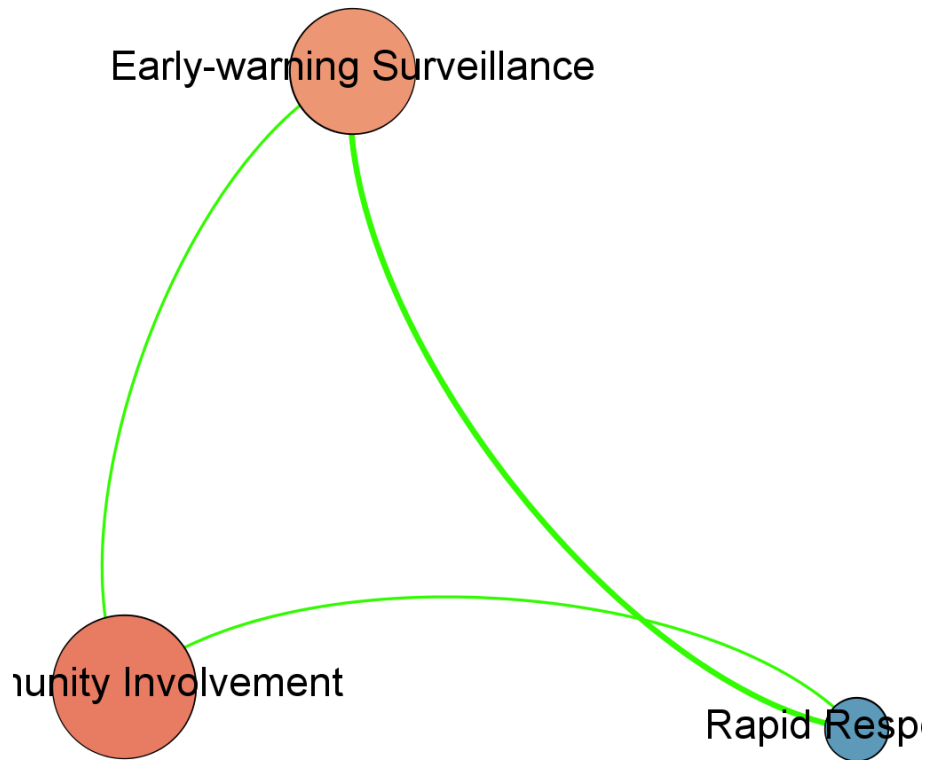
more directed and goal-oriented, whereas academic texts are more focused on the linkages across type or domain.

Health Systems Strengthening

Finally, Health Systems Strengthening (HSS) became a key concept in the lessons from the Ebola Crisis, largely because the outbreak took place in locations with such weak healthcare overall. HSS generally refers to development activities which improves the function or functions of a health system.[12] In the document data, however, it is clear that health systems became a 'buzzword' for lessons from Ebola. Although HSS is discussed frequently, it is rarely discussed in much more detail than to simply say 'health systems should be strengthened.' For example:

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[12]HSS, as defined by WHO, is "(i) the process of identifying and implementing the changes in policy and operational in a country's health system, so that the country can respond better to its health and health system challenges; (ii) any array of initiatives and strategies that improves on or more of the functions of the health system and that leads to better health through improvements in access, coverage, quality, or efficiency" (World Health Organization, 2011).

"A major issue for all three countries was the extensive and substantial effect of the epidemic on basic health care services." (Dahl et al., 2016, p.19) (Operational Text)

"Poor management of cases and ineffective outbreak responses, resulting from weak health systems in countries previously riven by civil war, with inadequate healthcare personnel and ineffective healthcare funding systems, further fuelled the epidemic, especially in the most affected countries." (Oleribe et al., 2015, p.54-55) (Academic Text)

"The Ebola crisis has shown that enhancing capacities and building resilient and sustainable health systems, combined with strong and functioning domestic and international governance are fundamental to ensure effective prevention, early detection and warning, as well as response for public health emergencies" (G7, 2015, p.7) (Policy Text)

Each of these examples discusses health systems in various ways but each uses the term as a catch-all for "poor country" effects like a lack of personnel and funding, or poor capacity to manage patients.

As we can see from the above examples, there is also seemingly an effect stemming from the sample itself. While the operational texts sticks to HSS as an end in itself, the academic text focuses on HSS as a means to more effective outbreak response. Further to this, the policy text refers to HSS as needing to be "resilient and sustainable" for "preventions, early detection and warning, as well as response" (G7, 2015, p7). This shows that while there is no real detail to lessons surrounding health systems strengthening, there is a variation in the rationales for what a health system should be strengthened towards.

This variation is seen also in the co-occurrence network data which demonstrates a broad citing of HSS lessons with a variety other lessons. Figures 5.7, 5.8, and 5.9 show the HSS ego-networks for the three samples.

Looking first to the academic lessons in Figure 5.7, we see a much smaller density of co-occurrence than in the other lessons. This is likely down to the fact that HSS is much more frequently referred to on its own as a single, overarching lesson.

HSS connects most strongly with development, likely due to the frequency with which HSS is referred to a development opportunity to allow for the strengthening of health systems in 'developing' nations. For example, this academic commentary discusses a necessity to develop the region (west Africa) to be prepared for other outbreaks:

Figure 5.7: Health Systems Strengthening Ego-Network for the Academic Sample
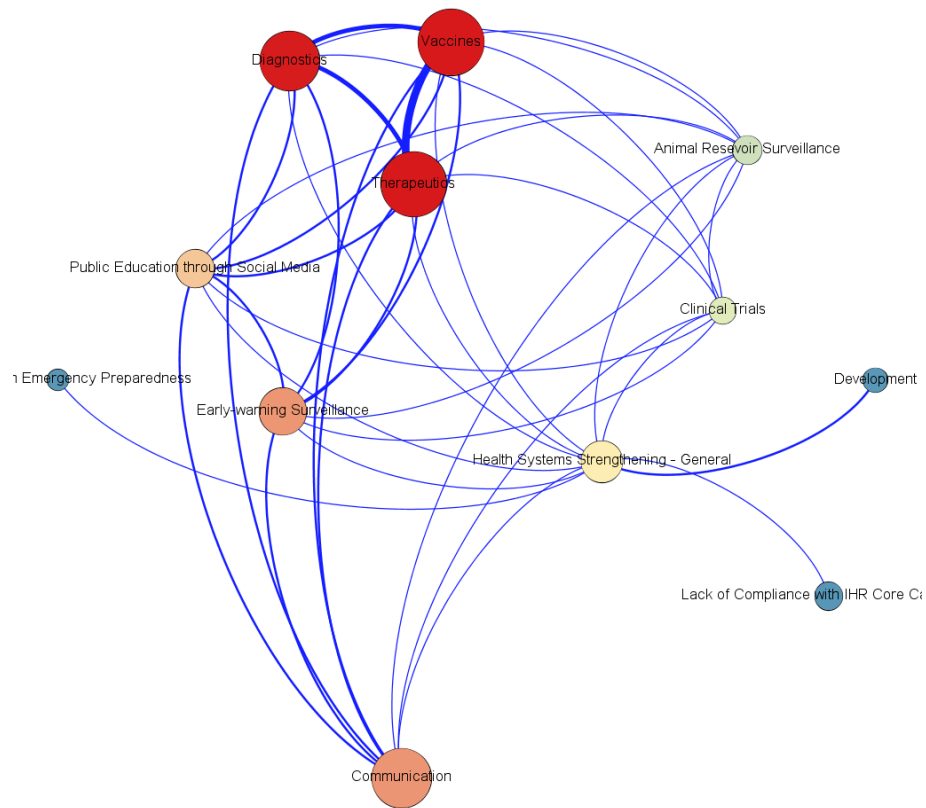
"there is a need to move beyond the current crisis and be prepared to support
the affected countries and the entire region to strengthen capacity to detect
'the unknown' and build a health infrastructure in which early warning systems
are functional." (Timen et al., 2015, p.87)

This is an example of a development lesson that refers to HSS but that subsumes these
under the GHSp's priorities towards rapid response and surveillance. Thus, this suggests
that even lessons outside of the GHSp are constrained into the frames provided by the
GHSp.

Next, looking at the policy lessons in Figure 5.8, again we see connections between
HSS and community involvement. We also, however, see connections between HSS, devel-
opment, and surveillance.

Again, looking at an example of a policy sample document we can see how HSS is
instrumentalised to serve the purposes of the GHSp:

"The Ebola outbreak exposed health system fragilities: poor infection con-
trol put health workers at risk and dissuaded patients from seeking treatment;

Figure 5.8: Health Systems Strengthening Ego-Network for the Policy Sample
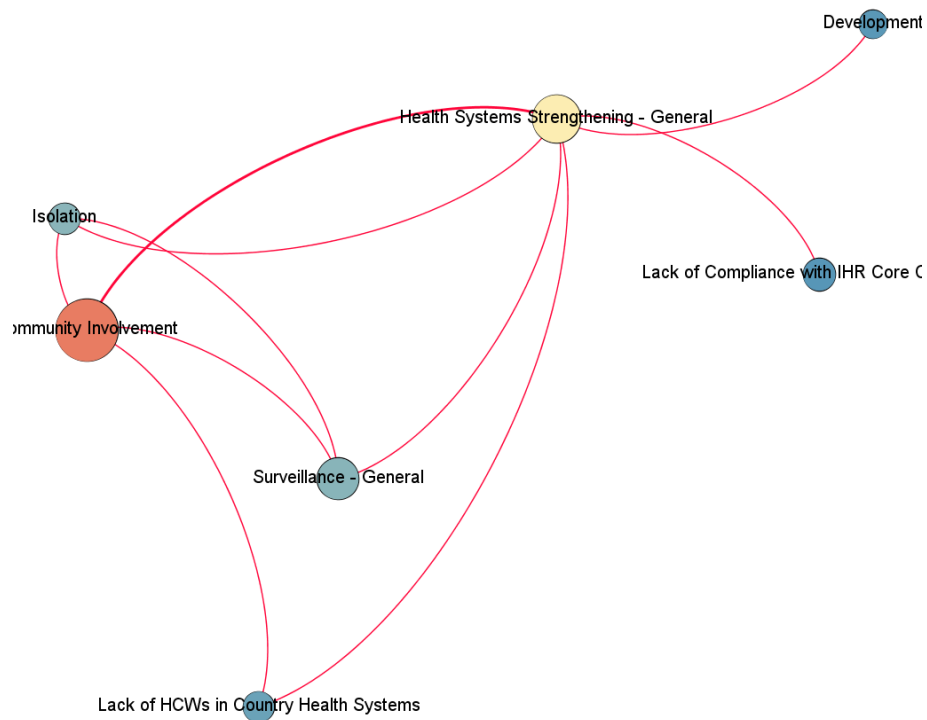
community-based health workforces were insufficient, and therefore unable to detect unusual symptoms or patterns, educate the community, or trace contacts; and public distrust reinforced rumours, impeding behaviour change." (Gostin and Friedman, 2015, p.1903)

Again we see how HSS is operationalised to mean developing GHSp-framed capabilities in countries with stretched resources. We also see the same happening to community involvement as above, even discussing how public distrust 'impeded behaviour change' rather than addressing *why* there was public distrust (Wilkinson and Leach, 2014).

Finally, looking to the operational lessons in Figure 5.9, we can see that there is a mix of lessons with which HSS co-occurs. The primary rationale for this seems to be that HSS is simply *not* a lesson that the operational sample refers to. In total there are only four documents out of a total of 64 that refer to health systems strengthening in any defined way.

This does not mean to say that the operational sample does not deal with the need for HSS, but that to state that HSS is needed in these countries is to state the obvious for

Figure 5.9: Health Systems Strengthening Ego-Network for the Operational Sample
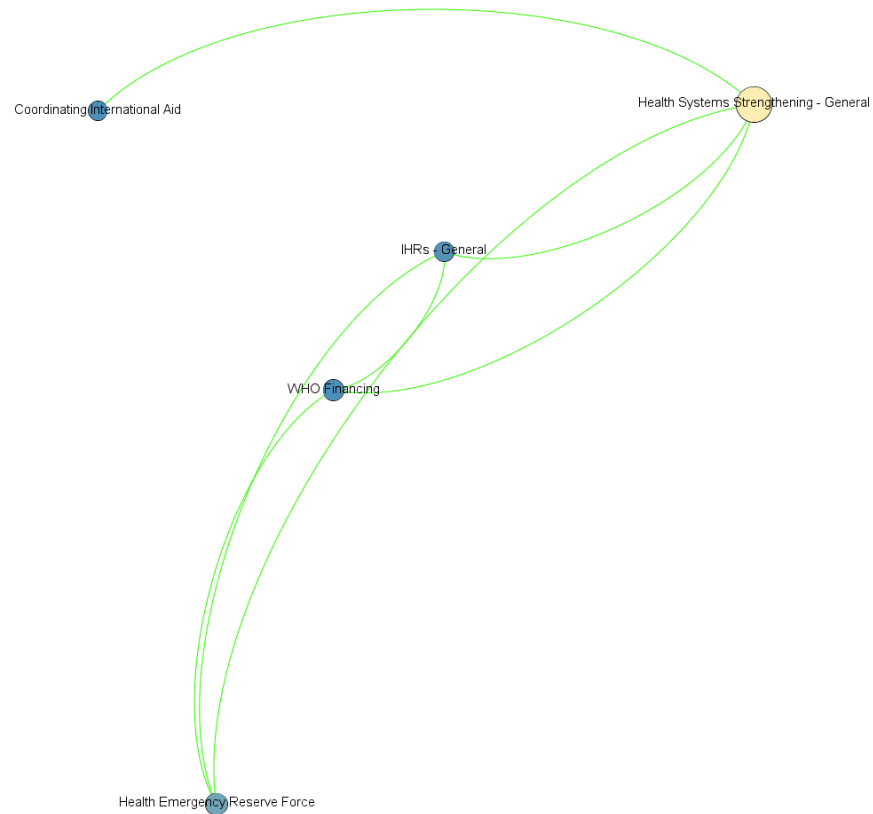
operational personnel[13] and therefore that a more nuanced understanding of the country-context requirements is thought out.

HSS indicates something wider that is suggested across the document sample: the diverging priorities between academic, policy, and operational discourse surrounding the Ebola crisis and outbreak response more broadly. When we look at how the academic and policy samples discuss HSS, we find how they narrow and constrain lessons down into serving GHSp priorities, while the operational understanding of HSS is much more nuanced. Additionally, we also see again that the academic understanding is interconnected with other lessons whereas the policy and operational priorities are much more goal-oriented.

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[13]This is corroborated by a quote we will see later from a report user interviewed for this thesis: "anybody who's spent like a month here would be like what are we going to do with this?" (Interviewee 058)

5.3.2   Differences across samples

Returning to the broader lessons, we find that the lessons shift when we split the data into the three separate samples. In this case we see the top lessons shifting to display interesting priorities for each sample. Looking to table 5.3 we see how the top lessons for the academic sample is generally concerned with a broad range of lessons including medical countermeasures, communities, and the health systems of the countries affected. We also see that community involvement, communication, and health systems strengthening are missing from the academic sample, but more specific lessons take their place. This demonstrates the broad priorities of the academic sample with specific characterisations of those priorities.

Ten Most Codified Lessons from Each Sample		
Academic Sample	Operational Sample	Policy Sample
Weak In-Country Health Systems	Training	Coordination
Diagnostics	Communication	Communication
Rapid Response	Health Emergency Reserve Force	Accountability
Community Trust of Responders	Community Involvement	Health Systems Strengthening
Patient Isolation	Personal Protective Equipment	Training
Research and Development	Early-Warning Surveillance	WHO Regional Office Structure
Clinical Trials	Bottom-Up Community Engagement	WHO Human Resources
Training	Vaccines	Collective State Action
Development	Sample Transport	Community Involvement
WHO Financing	WHO Financing	Civil-Military Response

Table 5.3: Table of the ten most codified lessons in each of the three samples for document analysis.

Looking at the operational sample, we see much more operational concerns displayed. Looking at the top three, training is often concerning the ways in which local healthcare workers are trained - "Hiring and training local staff members can enhance local capacity,

creating a pool of trained personnel who can respond in the aftermath of another public health crisis" (Purpura et al., 2016, p.965). Furthermore, the operational lessons also concern the creation of a cadre of personnel which can be rapidly deployed in an emergency. Both of these examples demonstrate operational concerns of the operational sample.

For policy, the priorities are much more governance-oriented. The top three for the policy sample concern the coordination of the various agencies and actors who are involved in the response - "The Ebola epidemic has resulted in the interaction between public health, humanitarian aid, civil protection and development and cooperation sectors. Identifying and understanding the main challenges to cooperation among sectors is paramount" (European Union, 2015, p.13). Additionally, the governance focus is displayed when we look at examples from communication ("Define and communicate clear decision making mechanisms for a response. Ensure that staff in key management positions are (i) aware of Oxfam's humanitarian mission (ii) take the right steps to build capacity and (iii) if they do not have the experience required are aware that decisions may need to be made elsewhere with them working alongside an emergency lead." (Adams et al., 2015, p.8)) and from accountability ("A second precondition is a legal and policy foundation to guide the response and establish accountability" (Kruk et al., 2015, p.1910)). This distinction in the priorities makes sense: the academic sample explores many things in depth, the operational sample is focused on on-the-ground response priorities, and the policy sample focuses on lessons for governance.

What we see when we look at the co-occurrence networks is in some ways similar and in others very different. Looking at figure 5.5, in the first instance, what we see is very similar. The academic sample provides a broad base, focusing on linkages across multiple types, whereas the policy and academic clusters tend to focus on governance (coordination, collective action, and accountability) and operational (training, personal protective equipment [PPE], and isolation) priorities, respectively.

However, when we look at the lessons from which multiple pathways can be discerned, we see more of what was seen previously in this chapter: varying priorities and connections for the *same* lessons. For example, the lessons on coordination are linked in different ways depending on the sample: the academic sample links coordination with community involvement and early-warning surveillance, while the policy sample strongly links coordination with collective action. This shows how coordination for the academic sample can be broad based, while coordination for the policy sample is narrowly focused on the governance aspects of coordination.
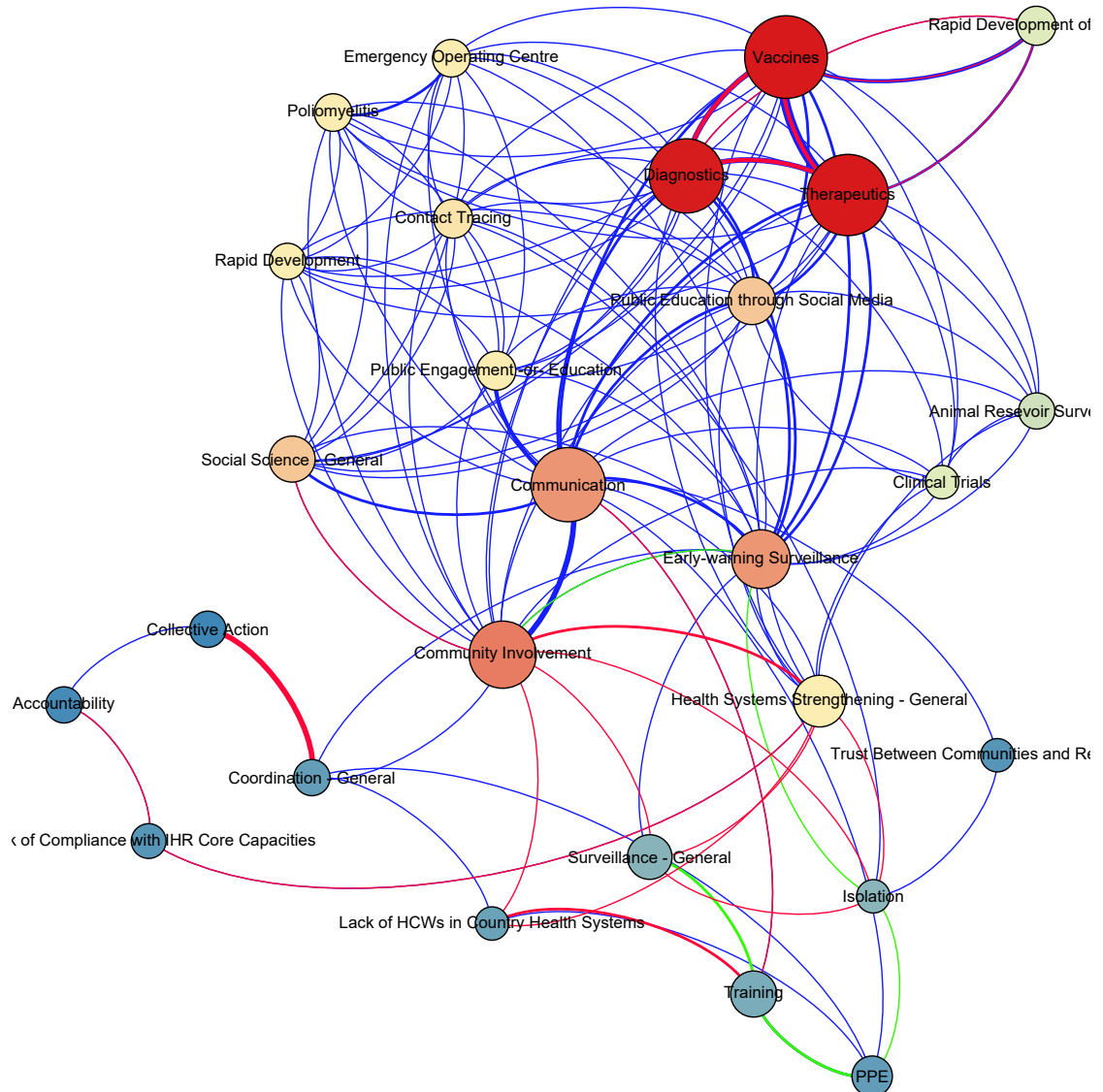
Figure 5.10: Network Graph representing how frequently lessons co-occur. Blue arcs represent the academic sample, red arcs represent the policy sample, and green arcs represent the operational sample.

5.4 The Ebola Crisis: Knowledge Used

What has been learned allows us to understand the level to which particular aspects of knowledge are developed from events, but what about the other side of the cycle? As we conceptualised in Chapter 2, knowledge accumulation operates in a cycle of experience abstraction and knowledge testing (Argote and Miron-spektor, 2011). The previous section observed the knowledge abstraction process, now this section observes the knowledge *use* process. This section examines the results from the 23 interviews with report users to understand the role that these codified knowledge documents play in learning from outbreaks.

5.4.1 How are reports viewed?

Given the exceptional and paradigm-challenging nature of the Ebola Crisis demonstrated above, we would expect to see that codified analyses of the outbreak's characteristics are useful. This is because the exceptional and complex nature of the crisis necessitates an equally complex learning process (Comfort and Kapucu, 2006). The utility of these reports stem from their ability to represent multiple voices and knowledges at once (Zollo and Winter, 2002) and transfer across time and space (Echajari and Thomas, 2015). These characteristics make them important for situations where common knowledge is ineffective or inapplicable (Booth, 1993).

When discussing so-called lessons learned reports with users, the general views on these reports were mixed but generally weighted towards negative views rather than positive. While there were 23 positive comments from 13 interviewees, there were 36 negative comments from 21 interviewees. Comments discussing the positive aspects focus on the value of the output itself for advocacy purposes, the value of participating in report processes, and the consensus across the reports pointing to gaps in responses or knowledge. The negative aspects converge, generally, around accessibility, performativity, and implementation of the reports themselves.

Implementation

In general, the main frustration with so-called lessons learned reports is the lack of implementation of the recommendations made by panels. In total, 21 comments were made about implementation by 12 interviewees. For some, the issue of implementation is simply lamented:

"I don't think we're learning the lessons which is quite frustrating because a lot of time and energy goes into and they just end up on a pile of [reports]." (Interviewee 006)

"So lessons identified is something that I've used for about the last ten years because I got fed up with going to lessons learned/after event discussions to hear that 'oh well communications was a problem' because I'd heard it for so many years before but nothing had ever happened. So you can't describe it as a lesson – you've identified it as a lesson, [but] what do you do with it?" (Interviewee 010)

For others, it is much more about the lack of political will for implementation of the recommendations:

"If you really have the wherewithal to go through all of these reports you can see certain common threads and you can see that certain mistakes are repeated over and over and you ask why after this report didn't this fundamentally change why didn't this fundamentally change. And you realise that there are certain political and economic forces that need to change before you can expect that the nature of epidemic response can change" (Interviewee 036)

"It's almost in some ways just having written documentation of what went wrong and what happened next and I think that there's very little value to the actual reports beyond that if they're not used in more of a policy oriented way which is why we're targeting WHA, trying to use leadership, putting out a course, trying to not just have this be a piece of paper that sits on the shelf but actually inform political input." (Interviewee 041)

"I think that at a big political level, the world, major governments, and member states and WHO tend to be reactive to problems. So you can somewhat see why, there are a million reports that come out everyday that say some problem's going to end the world and as a policymaker it's very hard for you to separate the wheat from the chaff in that." (Interviewee 042)

Furthermore, even if political will is there, interviewees note that it is often difficult to put into practice either due to a lack of access or inherent difficulty:

"I always think there's a value in lessons learned as long as they don't turn into what we call 'lessons forgotten.' One of the challenges that we tend to have

is that we do a lot of data collection post-event and it gets archived and then no one ever looks at it because the human condition is one in which we tend to value the less of history as we do the in situ intuitiveness of the moment." (Interviewee 061)

"The issue is the actual implementation of the recommendations. With anything, with any guidance, with any observation, okay we look at the problem, we identify what the problem is but how do we make it better next time? I think its in the – the answer is in the implementation. How everybody is going to take these recommendations and put them into practice." (Interviewee 065)

The essence of the negative comments on the whole surround these issues of implementation, interviewees don't find that reports are useful if the recommendations are not implemented. This view is understandable and consistent with the cyclic view of knowledge accumulation wherein knowledge must be *used* to be accumulated (Argote and Miron-spektor, 2011).

Output, process, and consensus utility

Looking towards the positive aspects of these so-called lessons learned reports, however, we find three main uses which give them value. First, the reports themselves are viewed as useful outputs. Their utility is seen in tools for advocacy:

"once a report is out then the others they have their own ideas but they don't start out from scratch; they know what has been proposed by the others. So yeah they are useful in terms of advocacy, in terms of making the political case." (Interviewee 027)

The report allows for individuals advocating for change to make an evidence-based argument, backed by the report's narrative and recommendations. Additionally, the reports are useful to share knowledge and recommendations which can subsequently be implemented:

"We know that all of these panels were discussed by the WHO Executive Committee. We know that WHO is making changes that were recommendations from some of these panels. So I think that's where it has more direct impact." (Interviewee 027)

"The reports are useful and in some cases the reports do share gaps that the actors that are meant to be the sort of change agent weren't aware of." (Interviewee 002)

This fits with the notion, put forth by Zollo and Winter (2002) and Echajari and Thomas (2015), that the codified knowledge is useful for transferring a particular piece of knowledge across time and space.

Second, the processes of panels themselves are seen to be useful as learning opportunities for those involved and as opportunities to 'make sense' of what happened. Participating on panels allowed for understanding and reflecting on ones own personal experiences:

> "its participatory, it allows me also to reflect on I the past what has been done, what I was doing, what it was like, what were the issues. I think we got it, for me I found it very useful." (Interviewee 015)

Furthermore, it is useful for gaining the perspective of others on experiences to collectively understand what happened:

> "many of the individuals there hadn't been directly involved in dealing with the outbreak at all, which was quite useful because it brings perspective that those who were involved in it might just gloss over." (Interviewee 010)

> "To be honest I think there's some value in that because when you're in an experience, objectivity is at best subjective and being removed from those data you can look at it through somewhat of a different lens more parametrically to compare and contrast your variables to make sure that they're grounded in such a way that if you were actually participants in such an event may be harder to do." (Interviewee 061)

More abstractly, one interviewee posed the what happened question as the central function of the report:

> "At its most basic level, it is to try and piece together in a coherent way the chronology of events and to understand the way events unfolded and what the reasons were for that in order to be able to understand analogous events in the future." (Interviewee 007)

This understanding of the process of reporting being useful for 'making sense' of what happened is consonant with Gephart et al. (1990) and Brown (2000, 2004) who argue that a report's function is to create a narrative of what happened to re-establish trust and authority for social institutions. Furthermore, personal reflexivity as part of the processes of a report's construction align with the reflexive understanding of codification processes put forth by Zollo and Winter (2002) and Echajari and Thomas (2015).

Third, moving from a view of single reports' functions, some interviewees noted how the consensus across multiple documents gave the recommendations credence:

> "I think power of the different reports was the consensus across them." (Interviewee 041)

> "I think that the number of reports is a reflection of how profound the experience was and that it motivated so many different organizations to rally, put resources, put names on the line, and try to move things forward. So while it looks like there were too many and they were redundant and there's a certain kind of silliness to this, it really wasn't silly it was a reflection of the profundity of what happened " (Interviewee 044)

> "It's the same recommendations for everybody, I would be surprised if people came up with completely different lessons because it was clear what happened, you can't really come up with completely different or opposite recommendations on how to make it better." (Interviewee 065)

For these interviewees, then, the utility of reports here stems from the consensus across them. Through a demonstrable consensus across many of the main reports, at least, it becomes 'obvious' what '*the* lessons' were and gives a discrete problem set to fix. In theory, if the recommendations across all reports were each the result of a "thorough and careful investigation" (Birkland, 2009, p.149), this consensus would then provide a cohesive platform for agenda-setting and policy change (Birkland, 1998, 2009).

Exclusive, superficial, and inapplicable lessons

These are not wholly positive aspects, however. Many of these aspects flip to being negative when one shifts the view to more specifically looking towards whose knowledge the consensus privileges and why. The most negative group among those interviewed were those whose role was operational and whose discipline was disaster/ crisis response. Issues here did hit upon implementation but were more focused on issues like a lack of participation, a lack of applicability and access, as well as finding the consensus across reports *problematic, not positive.*

This flip can be seen quite clearly when we take one academic and one operational view:

> "The outcome has been, again, the most important one in my view is the country-level activities." (Interviewee 005, academic)

"the actual rich details around donor flexibility, community response, like self-help and self-care and self-intervention by the hospitals ... none of that ever came out, it was never part of the debrief. I feel like any of the lessons learned type stuff was all just superficial, like duh, anybody who's spent like a month here would be like what are we going to do with this?" (Interviewee 058, operational)

Looking at these quotes we can see how the academic interviewee considers country-level important, the operational interviewee notes how country-level lessons were insufficient. While the academic interviewee is confident that "country-level activities" have been highlighted as "the most important" aspect of knowledge produced from the Ebola Crisis, the operational interviewee notes that these outcomes are "limited" and "superficial" for their purposes. This lack of examination of issues important to operational responders made the lessons derived either too broad to be applicable or obvious to these individuals.

As one explanation for this, interviewees cited a lack of operational responders' and community participation in lessons learned processes for reports' lack of engagement with operational issues:

"At best a couple of Africans at a continental NGOs like Africare, eHealth, and others all of which have their pros and cons ... other than that, no organizations were never really involved in any of these [lessons learned exercises]" (Interviewee 058, operational)

"The proportion of these things being written by people who were not there is quite extraordinary and so I think to some extent probably some of us ... when people external are writing things and you're there you're thinking what would they know that I don't know already?" (Interviewee 062, operational)

"I'm very sceptical about that because I think that the general weakness of all these reports is that they don't involve the stakeholders. In the panel was the former Minister of Health from Nigeria, and Mosoka Fallah – it was cosmetic. Not necessarily Mosoka, but most of the people who had to respond to it with the tools they had on the ground and the structures they had. They were not there. The same for the USAID report about civil mobilization. They interview the same usual suspects over and over and over." (Interviewee 034, academic)

> "The problem is that it is still a community of practice, and a small community
> of practice or community of interest where we don't tend to see people outside
> the pandemics realm and that will probably include emergency responders in
> that, being interested in this." (Interviewee 061, academic)

This exclusive participation ensured that decisions around audience, issues explored, and final report were made by those invited. This is particularly salient when one considers that interviewees above cited discovering 'what happened' as a primary function of the lessons learned report, as well as Gephart et al. (1990) and Brown (2000, 2004) who note that these reports play a role in cultural sensemaking around crisis. Given a lack of participation and the 'making sense' function of these reports, this raises the question *whose sense* is being made.

This sentiment is echoed further by interviewees noting the consensus across the lessons learned reports. While consensus for some interviewees was a positive, others have found it to be limited in its scope:

> "I think overall there have been too many reports that have almost identical
> recommendations ... Almost all focusing on WHO, there were so many people
> who messed up this response. You cannot just blame WHO, although they
> certainly do deserve some blame." (Interviewee 062, operational)

> "I think it's very worrying, it shows that we're unable to think out of the box.
> It shows that the global health community is . . . these reports are made by
> the same usual suspects all the time. Some of the diagnosis, it's scary because
> it produces the same recipes that are responsible for the failures" (Interviewee
> 034, academic)

For these interviewees, the consensus is not a sign of '*the* lessons' being learned but an indication of how closed learning has been to knowledges outside of the dominant narrative. This further indicates the way in which the sense that was being made was limited to only certain viewpoints, excluding other knowledges, and limiting the usability of lessons.

In terms of utility, the central value of these reports, then, is derived both from the report itself being an advocacy tool but also from the process allowing for participants and readers to 'make sense' of 'what happened'. This view is consonant both with the views of sensemaking scholars (e.g. Gephart et al., 1990; Brown, 2000, 2004) and of knowledge management scholars (e.g. Zollo and Winter, 2002; Argote and Miron-spektor, 2011; Echajari and Thomas, 2015). Reports, however, are perceived to be weak in terms of

their implementation due to a lack of buy-in and political will. Additionally, reports were perceived to be performative objects whose lessons were likely inapplicable and whose processes were exclusive and superficial. This also follows the work of Gephart et al. (1990), Brown (2000, 2004), and Birkland (2009) who argue that the reports produced are often performative objects whose lessons are not implemented.

5.4.2 How are reports used?

Given these perceptions of reports, with the sceptical value assigned to them by interviewees, it is useful to explore how the reports are actually used by operational responders, academics, and policymakers. With variances in the views of when and where reports have utility, we describe here how interviewees use the reports or processes in their own knowledge activities but also the *limits* of report/ panel process utility. Primarily we saw previously a split in *who* finds reports useful: policymakers use them to make policy, while operational responders don't find them useful. As we shall see in this section, one of the central reasons for this split is that operational responders' knowledge processes are generally tacit and reliant upon personal networks whereas policymakers' knowledge processes are generally more diversified and include a number of different processes including so-called reports.

In the first instance, the use of codified knowledge is limited for some users because of its accessibility and searchability. If responders cannot find or access knowledge that is codified, then its knowledge is not transferred to where it needs to be. One interviewee told a story about how the inaccessibility of knowledge made them feel as if they were re-inventing the wheel:

> "one colleague who was 27 and had a law degree and spent her evenings looking up decontamination techniques for ambulances and these sorts of things ... it was really remarkable, we felt like we were doing this stuff for the first time, like no-one in the world had ever decontaminated an ambulance ... it was like Ed from DfID [sic] had invented safe burials" (Interviewee 062)

The interviewee then went on to note:

> "A couple of months later, she finds that there's whole textbooks on this but the availability of that technical information, that how-to information was surprisingly inaccessible given that we've had loads of, not just Ebola outbreaks, but similar outbreaks." (Interviewee 062)

In this case knowledge which should have been reasonably well established and common knowledge was unavailable to those who needed it because finding such information was difficult.

We can also see from the interviews the importance of personal/professional networks in finding and using knowledge in response. For example:

> "It is pretty much, because I work with WHO on a lot of things, I get mainly WHO documents. The school of hygiene, being an ex alumni I get invited to a lot of the lectures so I went to a lot on EVD. But other things outside of the UK its pretty much if they come my way." (Interviewee 010)

Additionally, one interviewee noted how

> "[we have] 2500 staff members of which 1800 are overseas and they all have their own little networks and people have contacted us with 'I know someone at CDC and I've contacted him"' (Interviewee 066)

Often knowledge input into responses comes down to professional networks both from education and from cooperative projects. These professional partnerships are difficult and expensive to maintain, however, but worth the effort in some instances as one interviewee noted:

> "Simply having a partnership allowed us to routinely have meetings and travel to fancy capital cities for the meetings and many people ask why? it's a waste of resource? But in reality it is those meetings, which did allow for shared best practice, [that] built real trust and trust where, during Zika one country called me in the middle of the night and we were able to do something which probably saved both governments lots of money, headaches and was good for public health." (Interviewee 002)

During the response itself, some interviewees noted it was also useful having members of their teams have different skills:

> "we didn't know how to do operations so we hired someone to do it for us. But importantly when we had problems that person knew where to look, we needed with a very limited budget we tried to make every dollar go as for as we could for as many hospitals as we could." (Interviewee 058)

> "You need people who are closer to that kind of information maybe because they're specialists or whatever, you need them to come and maybe be available

> to give presentations in National coordination and people like me could make that happen. I was constantly coming across people who I thought knew stuff that I thought we could use for the broader response and I would drive them along to the coordination meetings and I would say now this person is going to present to us on thing X but that was such an arbitrary process and there were a lot of times when I wouldn't run into that person in the lobby" (Interviewee 062)

This use of team members as a source of knowledge is much more tacit in nature and involves being responsive to needs rather than preparing specific knowledge for responses.

Furthermore, personal networks themselves are important for gathering knowledge. Interviewees described how their knowledge would come from personal e-mails from individuals:

> "if I see something I'll copy and shoot e-mails to people that I think would be interested so we have a sort of informal way and we do keep each other informed that way" (Interviewee 066)

One interviewee noted how responders from the clinical or public health sphere tended to have more well refined questions and better access to knowledge:

> "we still knew startlingly little about Ebola. This outbreak posed us so many new challenges and we knew maybe even less at the community level but *there were very useful books that none of us were reading* ... The second part, is that *their networks were just tighter.* If you look at some of the people working with WHO, their day job is likely with a University, their day jobs are just immediately tighter, they just happen to come from that sort of academic, operational. So *before the research was even published, people would already have seen or heard about it.*" (Interviewee 062, emphasis added)

In this we see the value of personal networks in allowing individuals to understand developments in a broader field *before publication.* Additionally, knowledge of publications already out there that could have informed responses but didn't reinforces the idea that dissemination is paramount of a report's success in knowledge transfer. Interviewee 062 asserted that "there were very useful books that none of us were reading" refers to *Ebola, culture, and politics* by Hewlett and Hewlett (2008) which details a medical anthropological account of an Ebola outbreak in the Democratic Republic of Congo and includes details of the value of community involvement in responses that was not utilised in the

response. On the other hand, public health and clinical professionals in the response were embedded in universities and thus had access to publications *as they were being written*, providing more immediate access to knowledge.

These professional, team, and personal network examples demonstrate the importance of *transactive knowledge* in complex settings and responses. Transactive knowledge is not about knowing *what* but about knowing *who* - who knows the answers to questions you have? (Brauner and Becker, 2006). For our purposes, however, it shows that the knowledge value of the report is not isolated to the codified output but the tacit knowledge held by the authors. The accessibility of a report's recommendations is therefore a function of the accessibility of the *authors* as well as the report text.

Returning to the availability of knowledge, this point on transactive knowledge is particularly salient given that interviewees often turned WHO and CDC to for knowledge because of their reputations as expert actors in this space. As one interviewee noted:

> "We tried to get WHO to help, that would have always been my instinctive approach. Would not have been a google search but these are the guys with the mandate ... I would always have been going on to 'who are the experts on this and they should be telling us what's what.' This was one of my mistakes in the response because I should have been looking at it but I was like they're the right people to be telling us things." (Interviewee 062)

Additionally, when asked where they search for knowledge if problems are encountered, one interviewee answered:

> "A combination of things, including going on websites like the WHO, there's Massachusetts General here that has a department called the Global Response Group and we've been in contact with those people." (Interviewee 062)

Another interviewee answered:

> "Coming back to your question, where do you go when problems arise in response, where do you look for a solution, when it came to technically what do we implement, the experts; CDC and WHO" (Interviewee 058)

Knowledge availability and the use of reports is not, therefore, simply about whether recommendations are presented in a clear and implementable way but that these recommendations come from a *reputable and readily available source*. The users of a report must *trust* the source, authors, and motives of the report - preferably through *personal and physical* engagement with the panel members themselves.

5.5 Summary

This chapter has discussed the embedding case for this thesis, the 2013-2016 Ebola crisis. The first part of this chapter established the paradigm-breaking nature of the ebola crisis. First, demonstrating that the GHSp's conceptualization of a crisis was matched by the ebola crisis through high death rates, potential (then actual) economic chaos, and a discursive securitization of the crisis. Given these characteristics, the three tenets of the GHSp's response to insecurity should have been seen in full force but were not.

As we saw, the surveillance designed to provide early-warning of an outbreak did not notify the world of ebola cases until three months after the index case had died. Furthermore, in the face of mounting panic, the WHO that was supposed to lead and be authoritative did not respond and didn't even declare a PHEIC until five months after the first reports and after the death toll had reach triple figures. Finally, the medical countermeasures that were supposed to be rapidly produced to protect responders and treat patients was absent, despite ebola being known to science and a frequent outbreak for the last 40 years.

Establishing the ebola crisis as a crucial case allowed us to motivate examining the production and use of codified knowledge in this context. Recalling Kolb (1984), Argyris (1999), and Argote and Miron-spektor (2011) we define knowledge accumulation as a recursive cycle characterised by abstracting knowledge from experiences and using that knowledge in new, similar experiences. This chapter was therefore designed to examine both sides of this cycle in the context of the ebola crisis.

Given the paradigm-break nature of the ebola crisis, we should have expected to see a number of 'new' lessons that were not part of the GHSp being produced and codified. Through an analysis of 267 different documents detailing lessons from the ebola crisis we saw that, on the whole, this is indeed true. We saw that, broadly, the main lessons codified from the ebola crisis concerned communication, community involvement, and health systems strengthening.

When we looked deeper at these lessons, however, we saw that each sample discussed them differently. The academic lessons were generally highly interconnected and abstract while the policy and operational lessons were much more goal-oriented in nature. This indicated an intuitive idea that different authors and audiences produce different lessons in different ways and for different reasons.

As we began to explore *how* the lessons were codified, however, we found two distinct phenomena: first, the new lessons on communications, community involvement, and

health systems strengthening were often re-framed often into terms and conceptualizations amenable to the GHSp. For example, we saw how HSS was re-framed to create a development framing of building in-country capacity *to prevent, detect, and respond* to outbreaks rapidly. This is as opposed to building health systems more broadly in line with the needs of the country. This suggested that lessons codified are viewed through the lens of the dominant paradigm, even if they are outside of this paradigm's main narrative.

Second, we saw how the GHSp,as a lens, shapes the *depth* of analysis for certain lessons. As shown, the lessons surrounding communication, community involvement, and HSS were often superficial and loosely defined whereas lessons pertaining to the WHO's authority or to the rapid production of medical countermeasures often had much more detail and depth of analysis associated with them.

Both the re-framing of new knowledge into the existing paradigm and the high depth of analysis for certain knowledge in the paradigm are consistent with Kuhn (1970) and his notion of a paradigm-guided investigation. Additionally, the development of some knowledges and not others is indicative of the path-dependent nature of paradigms that both Dosi (1982) and Hall (1993) refer to. We can therefore infer that the production of knowledge from the ebola crisis, despite the paradigm-challenging nature of the event, was informed and shaped by the Global Health Security paradigm.

As we explored the other side of the knowledge accumulation cycle, we queried the utility of codified knowledge in outbreak responses. Our motivation here was to explore how, if at all, the lessons codified like those in section 5.3 are translated into practice. We explored this using 23 interviews conducted with various types of report users to understand how they use reports and their normal knowledge practices during outbreaks.

The first thing we noted with these interviews was the difficulty in implementing the results from so-called lessons learned reports. Owing to the political and financial challenges of introducing sweeping reforms or of massively reconfiguring health systems, many of the interviewees were concerned about the implementability of report recommendations. Furthermore, interviewees were concerned that reports would simply 'end up on a pile' and never be looked at again.

Interviewees were positive about some aspects of reports. In particular, the consensus across the reports from the ebola crisis for some interviewees indicated a clear set of *the* lessons to be implemented and gave a clear agenda. These interviewees found that the reports themselves allowed for a clear articulation of priorities and were a useful advocacy tool. Operational and disaster response interviewees were, on the other hand, critical of

this consensus, describing it as a lack of 'thinking outside the box' and noting that these lessons were often superficial or inapplicable to them.

Looking at interviewees' normal knowledge sources and processes it was clear that participation and ease of access were paramount in the use of knowledge. Interviewees were highly dependent on their personal and professional networks to provide them with knowledge. This is often ad hoc and highly dependent upon transactive knowledge (Brauner and Becker, 2006) about who knows what. Interviewees here also noted how a lack of applicability, trust in the reports, and of capacity to *find* knowledge inhibited them from using prior knowledge and thus required them to effectively re-invent a number of standard practices anew.

We found, effectively, that the GHSp had constrained the lessons produced from the ebola crisis. This was either by re-framing novel lessons like health systems strengthening or community involvement into instruments for GHSp priorities, or by reducing the depth of analysis for extra-paradigmatic lessons. We also found that the use of these reports is highly dependent upon the applicability of the lessons, participatory nature/dissemination of the report, and the ability of users to know *who* knows the answers to questions they have.

Returning to Birkland (2009), we can refer back to his ideal-type model of event-based learning in Figure 5.11 and the notion of a 'thorough and careful investigation' that leads to policy change. In viewing this we can ask *what are the characteristics that make an investigation thorough and careful* and *what leads to agenda attention, group mobilization, and policy change?*

According to the results of this chapter, a thorough and careful investigation that will lead to agenda attention, group mobilisation, and policy change has the following characteristics:

1. The process is participatory - this ensures that stakeholders are aware of the results as well as *who* understands the results and can be approached with questions of problems

2. There is a strong evidence base - this allows users to *trust* the report's conclusions and gives users a rationale for advocating policy changes

3. The report is disseminated well - this creates both attention and awareness of the report whilst also making the authors and the knowledge more easily accessible because users will *know that it exists and is applicable to them*

Figure 5.11: An ideal model of event-related policy change
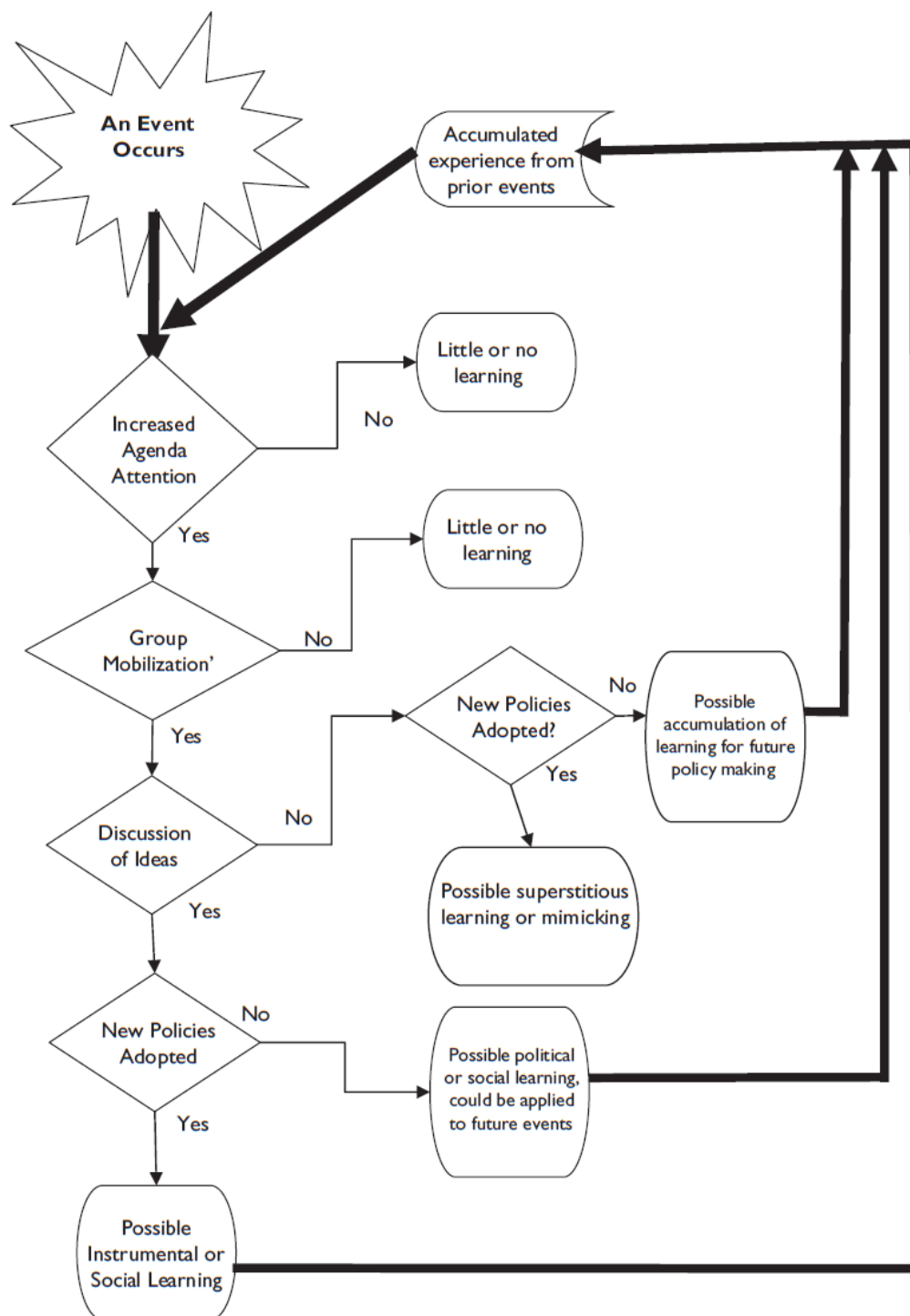
Source: (Birkland, 2009, p.151)

The exact nature of these three characteristics will vary depending upon the investigation's audience, purpose, and event in question but these three factors seem to determine how well a report is *implemented*.

The next two chapters take these three characteristics and map them onto two report-

construction processes: the Ebola Interim Assessment Panel and the Harvard-London School of Hygiene and Tropical Medicine's Independent Panel on the Global Response to Ebola. In examining these, we shall first show two examples of where these three characteristics were absent. We shall then also demonstrate, by taking the two together, that a focus on the *process* of report-construction as well as the inputs and outputs is important.

Chapter 6

Embedded Case 1: The Ebola Interim Assessment Panel

6.1 Introduction

Previous chapters have described outbreak response as focused on the production of medical countermeasures, the empowering of WHO to respond, and the use of early-warning surveillance systems. This dominant paradigm of outbreak preparedness and response was challenged by the 2013-2016 Ebola crisis' initial lack of countermeasures, weaknesses and delays in WHO action, and a surveillance system lacking capacity. The lessons which have been codified in the wake of the Ebola crisis demonstrate a recurrence of this paradigm with the addition of community engagement and public communication. Furthermore, the policy and operational literatures were found to be the elements of the sample which focus the broad academic base into clusters.

This chapter focuses on a case of a lessons learned document; the Ebola Interim Assessment Panel (EIAP). The aim is to understand how, from such a broad possible base of knowledge, the final documents were constructed through the work of the panel. To answer to question "how was codified knowledge produced and used in the Ebola Crisis?" this chapter will ask: what lessons were codified in the report of the EIAP? What narrative justifies these codified lessons? What processes were used to arrive at these conclusions? What evidence was considered in arriving at these conclusions?

The panel was commissioned on 25th January 2015 in a Special Session of the Executive Board of WHO. Over the course of the Panel's work between commissioning and final publication of the report (July 7th 2015), four main phases appear to have occurred. First, a *scoping* phase in which the external context, narrative, and individual agency forms a

definition of purpose for the panel and initial thoughts on recommendations and lessons. Second, an *evidence gathering* phase collects data, evidence, and perspectives under the scope from the initial phase. Third, a *closing-down* phase settles on a final narrative and recommendations, ensuring evidence supports the recommendations made. Finally, a *dissemination* phase occurs through which the recommendations made are disseminated to the wider community. This section explores what occurred in each phase and how it impacted the final report.

What we can see with the recommendations is a clear alignment with the priorities of policymakers. In table 6.1 we have the top recommendations of the three samples seen previously in chapter 5. In this table, each of the recommendations that appear in the report of the EIAP are highlighted. While 2 of the top operational lessons appear in the report of EIAP, 4 out of the the top policy lessons and all of the top academic lessons appear in the report. This is not necessarily surprising as this is a policy document and as such its alignment with policy priorities is expected, but its direction at academic priorities does not necessarily follow.

Table 6.1: Five most codified lessons stratified by sample. Lessons in bold appear in the report of the EIAP.

Five Most Codified Lessons from Each Sample Appearing in EIAP		
Academic Sample	Operational Sample	Policy Sample
Weak In-Country Health Systems	Training	**Coordination**
Diagnostics	**Communication**	**Communication**
Rapid Response	Health Emergency Reserve Force	**Accountability**
Community Trust of Responders	**Community Involvement**	**Health Systems Strengthening**
Patient Isolation	Personal Protective Equipment	Training
# of lessons: 5/5	# of lessons: 2/5	# of lessons: 4/5

Source: Author's elaboration

Looking at the composition of the panel (table 6.2) we find that the panel is balanced in terms of expertise between humanitarians, health experts, and global governance experts as well as institutional and geographical backgrounds. This is interesting given the

Table 6.2: Table of Panellists and Backgrounds

Panellist	Expertise	Institutional Background	Geographical Background
Dame Barabara Stocking	Humanitarian	NGO	United Kingdom
Jean-Jacques Muyembe-Tamfum	Health	Government	Democratic Republic of Congo
Faisal Shuaib	Health	Government	Nigeria
Carmencita Alberto-Banatin	Humanitarian	International Organization/ Consulting	The Philippines
Ilona Kickbusch	Global Governance	Academia	Germany
Julio Frenk	Global Governance	Academia/ Government	Mexico

Source: Author's elaboration with data from World Health Organization (2015e)

discrepancy in the lessons themselves: why is there not a balance of all three categories?

This chapter explores the process of producing the report of the EIAP, highlighting its accountability aim and need to be seen to be 'doing something' context. This context will be followed by a series of sections of various phases of report construction which identify key processes and highlight how they related to lessons stated in the report. Generally, this chapter will demonstrate how the process of producing the report of the EIAP had very little scope or time to be able to fully examine the Ebola Crisis and to be able to learn the lessons. This led to a report which broadly adhered to the GHSp and produced lessons that reinforce the systematic failures that led to the Ebola Crisis.

6.2 Report Context

The Ebola Interim Assessment Panel was convened at the behest of the WHO Executive Board during its Special Session on Ebola. This Special Session, held on in Geneva on the 25th of January 2015, was convened to discuss the Ebola crisis and the WHO response to it. This section outlines the context in which the report was produced, noting its broader

intention outside of a simple evaluation of WHO's response to the Ebola crisis and the external outbreak context over the period in which the report was authored.

From its request on the 25th January 2015, to its first reporting at the 68th World Health Assembly between May 18th and May 26th 2015, the authors had less than four months to gather data, discuss, and draft the conclusions. A further 6 weeks were then taken (during which time the panel met for a third and final time) to finalise the report which was published on July 7th 2015. In the five months from 25th January 2015 to July 7th 2015, the response and outbreak contexts changed significantly. The report was *commissioned* after a series of response failures, a mounting crisis of increasing infections, and a scaling up of response efforts. The report was *published* when case and death report rates had fallen rapidly, recovery efforts were being put into place, and the response was scaling down.

Additionally, during the EIAP's process, other panels were convening and being commissioned. Figure 6.1 (overleaf) shows the case and death rates mapped onto the period of each of the five major report processes. This shows how the EIAP was established and conducted as the outbreak was winding down. Furthermore it shows how the EIAP is the shortest of the five major reports, was published *first* and, as we shall see later, had common panel members or communication with all four of the other panels. As we shall argue when looking at the process, this context is important because the EIAP set the tone for the other reports.

Looking at the case and death reports for the outbreak, a significant fall can be seen. On 21st of January 2015, a total of 368 new cases and 169 deaths were reported from the previous week (Centers for Disease Control and Prevention, 2016). By July 8th, the total new cases and total deaths were down to 69 and 15, respectively (Centers for Disease Control and Prevention, 2016). WHO declared Liberia free of Ebola on May 9th 2015, not for the last time during this crisis (McKie, 2015).This reduction of case load by 81% and of death rate by 91% shows the drastic improvements made between the report's commissioning and its publication.

Looking at the WHO situation reports from the outbreak, it is clear that the response was winding down as the report was being authored. Ebola Treatment Units (ETUs) are a good indicator of the scale-up and scale-down evident at inception and publication of this report. At inception, 44 ETUs were open and 17 were under construction (World Health Organization, 2015c), whereas at publication 24 ETUs had been closed and 24 were to remain open (World Health Organization, 2015d). Similarly, the laboratory capacity shows
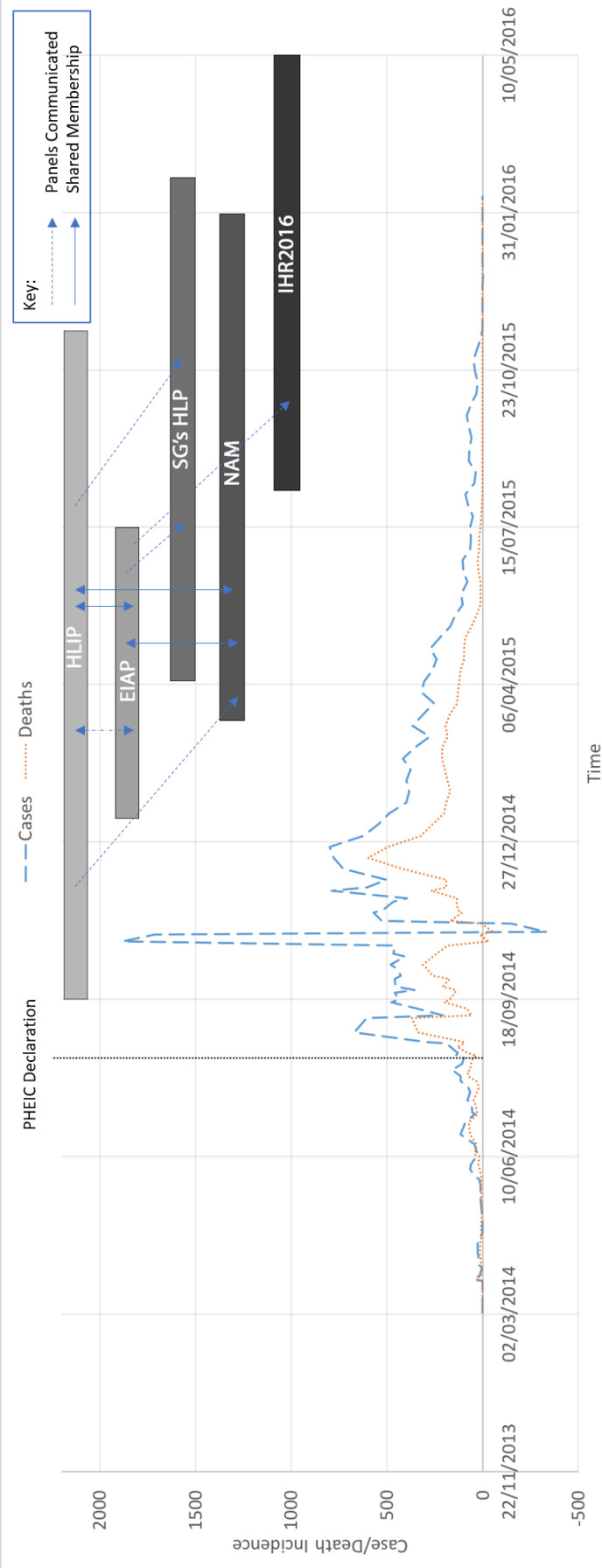
Figure 6.1: Plot of case and death rates over the course of the Ebola Crisis (asapted from data in Centers for Disease Control and Prevention (2016)). Each box represents a major international panel: HLIP, the Harvard-LSHTM Independent Panel; EIAP, the Ebola Interim Assessment Panel; SG's HLP, the UN Secretary-General's High Level Panel; NAM, the National Academies of Medicine Panel; IHR2016, the Review of the Functioning of the International Health Regulations in the Ebola outbreak. Box positions represent the beginning and end of the processes.

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a scale up and then back down. In January of 2015 27 laboratories were actively performing Ebola diagnostics, with a further 5 planned (World Health Organization, 2015c) whereas in July 2015 24 laboratories were active and a further 16 had been closed (World Health Organization, 2015d). This demonstrates a scaling down of the response in addition to the decreasing case reports.

In addition to the on-ground realities, there was also a clear external narrative surrounding WHO at the time of the report's commissioning. This narrative, promoted by both media sources and academic communities, placed blame on WHO. For example, a BBC report of leaked internal documents and comments from WHO Director-General detailed how they "signal growing concerns about the effectiveness of the agency's efforts against Ebola" (BBC, 2014). This narrative of blame may have put WHO in a defensive posture as it calls for an analysis of its own actions in the response.

A further BBC report focuses on the Executive Board Special Session which convened the EIAP and headlines that WHO Director-General admitted that WHO was "too slow" (BBC, 2015). Further to these, a news feature in the *British Medical Journal* in October 2014 commented on WHO's delayed response and quotes MSF International President Joanne Liu saying "I am running out of words to convey the sense of urgency" (Arie, 2014). The narrative surrounding the EIAP then, was one of blaming WHO for the state of the Ebola crisis, requiring an intense accountability performance to restore faith in the institution.

In the aftermath of the report, the coverage was similarly blame filled. One feature by *Radio France International* called the report of the EIAP "too little, too late" on the part of WHO, citing Liberian and Sierra Leonean officials (Bagnetto, 2015). The MSF response to the report queried how the recommendations will "translate into real action on the ground in future outbreaks" and discussed how "we went from global indifference, to global fear, to global response and now to global fatigue" (Liu, 2015a) demonstrating a wider, more global view. And an article in *The New Yorker* focused on the West and how politics delayed the response, saying that "this negligence would be unforgivable in any instance, but it is not the first time" (Specter, 2015). This contextual focus on who the report blames is important because it reveals the success of the report in shifting blame from WHO to the political institutions which created and continue to fund it.

The report of the EIAP, then, was established in the height of the outbreak but was conducted as the crisis was slowly lifting. In the early context of the report it is clear that the focus was on blaming WHO for the Ebola Crisis and that EIAP had a task of

providing accountability for WHO. In the aftermath of the report, it is clear that the report was successful in diffusing blame across not just WHO but its Member States as well, focusing criticisms on the political barriers placed on WHO by member states. The next sections explore how the processes of the EIAP produced the report itself.

6.3 Phase 1: Scoping, Terms of Reference and Panel Selection

In this first scoping phase, the WHO's newly created Evaluation Office was tasked with identifying panel members according to various factors like expertise, institutional background, and geographical background (Interviewee 057, see Table 6.1). First, Dame Barbara Stocking was appointed as panel chair in February with an expectation for a report by May[1].

This request that was quickly rebuffed as "impossible" (interviewee 009) given that it was mid-Feburary by the time the chair had been recruited. The deadline was then revised to July, just two months later, and a presentation of a *draft report* to the 2015 WHA (sitting in May of 2015) instead. As we shall see later this effectively kept the timetable, especially given that very little changed between the draft report and the final report. This limited timetable for the panel, then, was clearly geared toward WHO accountability to member states.

Limited time for the panel also limited the amount of knowledge that could be produced and accumulated in the panel's processes. As put by interviewee 009 "I think that what they thought was that they might put a bunch of people in a room for a day, and have them - as a set of experts - just say what they thought of it." This limited *a priori* understanding of the panel's process is suggestive of the performative accountability intended from the outset.

Additionally, keeping the final report deadline at June allowed the panel's report to feed into the UN Secretary-General's High Level Panel on the Global Response to Health Crises (interviewee 009). This acknowledgement that the panel would need to feed into a wider set of reports is interesting from a knowledge accumulation perspective. On the one hand, the acknowledgement allows for a flow of knowledge and lessons from one level to the next. On the other hand, as we shall see in the following sections, knowledge from those on the ground were limited in their inclusion in the EIAP's processes, so this continuity

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[1]This was set out in the resolution establishing the panel which requests that the report "be presented to the Sixty-eight World Health Assembly" (WHO Executive Board, 2015, p.10)

of knowledge is limited solely to policy documents.

In the recommendations here, we see the impact of this with a number of recommendations made for *other panels to explore issues*. Three recommendations give advice to the upcoming (mandate determined by the reviews IHRs (2005) and was established in May 2015) IHR Review Committee; to consider incentives for countries notifying WHO, to consider disincentives for countries taking excessive traffic and trade measures, and to consider a possible intermediate level of a PHEIC. Additionally, the panel recommend that the United Nations Secretary-General's High Level Panel on the Global Response to Health Crises (UN High-Level Panel) "put global health issues at the centre of the global security agenda" (World Health Organization, 2015e, p.6) by creating procedures for taking health matters to the UN Security Council. Not only was the panel limited in time and in scope, then, but the recommendations it makes are limited commensurately.

The panel's first meeting occurred over March 30th to April 1st 2015 in Geneva. It's agenda was first to explore the implications of its obejctive set out in the resolution which established the panel:

> "an interim assessment, by a panel of outside experts, on all aspect of WHO's response, from the onset of the current outbreak of Ebola virus disease, including within the United Nations Mission for Ebola Emergency Response, in implementing the WHO's Emergency Response Framework, and in coordination, including resources mobilization, and functioning at the three levels of the Organization" (WHO Executive Board, 2015, p.10).

The Terms of References, as set out in the report of the panel, are as follows:

- "assess the roles and responsibilities of WHO at all three levels of the Organization in responding to the outbreak and how these evolved over time;

- assess the implementation of the tool at WHO's disposal (in particular the Emergency Response Framework, and the International Health Regulations [2005]) to carry out its mandate before, at the onset of, and during the outbreak;

- assess WHO's role within and its contribution to United Nations-wide efforts (within UNMEER);

- assess the strengths and weaknesses of those actions, determine lessons learnt that could be applied to the existing ongoing situation and for the

future (including capacity, tools, mechanisms including coordination and communications, structure, ways of working, resources);

- provide recommendations to guide the current response and to inform future work, including with regard to the strengthening of organizational capacity to respond to outbreaks and the establishment of a contingency fund." (World Health Organization, 2015e, p.27)

In interpreting the terms of reference, interviewees noted that WHO leadership kept a light touch approach. Interviewee 009 noted that boundaries were clarified and that they were not tasked with examining the whole of the UN approach, while Interviewee 056 noted that "there was a lot of freedom for us." Interviewee 057 noted how the Evaluation Office, similarly, as secretariat to the panel had very limited interference from WHO leadership. Scoping the inquiry, then, formed the first moment where the panel began shaping the report.

In the first instance, this scoping of the inquiry gives us evidence of individual agency in the knowledge codification process. The report of the EIAP discussed WHO as both the Secretariat and its Member States. This framing of WHO as not simply the Secretariat but its Member States (and therefore criticizing the Member States, not just the Secretariat) came directly from one interviewee: Interviewee 056 noted that "most of the discussion ... had been pretty much centred around highly personalised accounts of incompetent bureaucracy" but that the interviewee's "main contribution was to note that WHO was not just the Secretariat but also the Member States."

This acknowledgement of Member State responsibility is referred to in the report itself with a discussion of Member States' development of core capacities. The report discusses Member States' necessity to develop IHR core capacities and how "many have failed to do so" (World Health Organization, 2015e, p.10). Additionally, the report claims that it is "irresponsible for countries with the resources to build these capacities not to have done so" (World Health Organization, 2015e, p.11) and that states without the resources "need support from the Secretariat and other Member States" (World Health Organization, 2015e, p.11). Further, the report discusses how "weak health systems, poor surveillance, little early awareness of population mobility, spread of the virus in urban areas, poor public messaging" (World Health Organization, 2015e, p.13) complicated the declaration of a PHEIC - one of the central criticisms of WHO in the outbreak. This focus on Member States, including placing a large weight of the blame on national health systems and national responses, fits squarely into the logic of global health security. Furthermore,

it shifts blame from WHO and to the Member states which is a part of this reports accountability performance.

Additionally the report's discussion of Member States' taking actions beyond those in the temporary recommendations of the Emergency Committee is also suggestive of this acknowledgement of Member States' responsibilities. According to the report, these travel recommendations "significantly interfered with international traffic" (World Health Organization, 2015e, p.11). The report goes further than this, though, and says that "Member State behaviour threatens the response to the crisis" (World Health Organization, 2015e, p.12) and calls for "a procedure to take this matter to the United Nations Security Council" (World Health Organization, 2015e, p.12). This raising of Member State non-compliance to the level of the UN Security Council further added to the security narrative and further adds to the blame shifting.

Next on scoping, interviewee 009 notes that "We didn't have to deal with the whole UN response, it was WHO specific. Nevertheless I said in the beginning we're going to have to look at what other people are doing." In making recommendations as to how WHO should engage with the wider health and humanitarian systems, the panel finds a distinct lack of understanding across the health emergency and medical humanitarian actors. The panel also cites problems with emergency grading levels and the differences between the UN Cluster System and PHEICs - not dissimilar to the problems seen in 2009 with the confusion across PHEIC declaration and the WHO's own Influenza grading system. In addition, the panel noted the role that UNMEER had and its duplication of many of the functions of the Inter Agency Standing Committee, UN Office for the Coordination of Humanitarian Affairs (UNOCHA), and other UN agencies.

This set of recommendations requests that WHO staff and partners gain a better understanding of the humanitarian system. In concert with this, it is requested that WHO considers how to coordinate its emergency grading systems and PHEIC declarations with the wider humanitarian system's. The panel then goes on to recommend that the UN High-Level Panel should emphasize "the special nature" of health emergencies and that understanding this within the humanitarian system should be led by UNOCHA.

That the panel tried to expand their view outside of the terms of reference demonstrates further how the time and scope constraints affected their ability to learn more broadly. While the panel tried to expand beyond the terms of reference, the recommendations and discussions stuck to a very particular understanding of disease outbreaks as a "special case" which requires specific responses and thus a centrality of WHO. Further to this, the

recommendations include setting objectives for other panels and their reports, indicating a lack of time and scope to fully investigate certain avenues.

We can also see how an external narrative shapes the frame with which the panel understood the outbreak. Interviewees frequently made comments about the problems being obvious or about knowing broadly what had happened before the panel had started its work. Interviewee 009, for example, noted that the report "was probably the easiest report I have ever known to write because the situation was so blatant." This clarity from the beginning guided the questions asked and the evidence gathered as well as motivating the performative 'being seen to be doing something' aspect of the report.

Additionally, Interviewee 056 explained that "as soon as we met the first time some things were clearly going to be very important ... the diagnosis of how bad the response was had been done before, criticisms were loud and clear." This was linked back to external narratives by Interviewee 056 who said "we are all experts and had obviously been reading the news and following developments, so we all had some ideas about what had gone on." Clearly, then, the narrative playing out before the panel was convened had an impact on the understanding that panellists brought with them into the report process and impacted the outcomes.

In terms of the dominant paradigm and the lessons established in the previous chapters, this set of recommendations is particularly informative. Primarily, the entire swathe of recommendations based around re-establishment of WHO as the "directing and co-ordinating authority" (World Health Organization, 2014a, Article 2(a), p.2). This follows the dominant paradigm's reliance on WHO as a central actor. In addition, the call for a "culture that accepts its role" emphasises that WHO does not only require new response capabilities, but that its *internal* culture is reluctant to perform its role envisaged by global health security.

Furthermore, the specific recommendations of bolstering WHO authority in country offices and as the definitive communicator during health emergencies further establishes WHO as the envisaged central coordinating actor. This is compounded by the recommended creation of a WHO Centre for Emergency Preparedness and Response which envisages WHO not just as a coordinating actor but as a *response* actor.

Additionally, the recommendations for the UN system to recognise and understand health emergencies' "special nature" further embeds this narrative of WHO centrality. Describing health emergencies as having a "special nature" places the global health security paradigm in a silo which cannot be responded to with standard humanitarian techniques,

but only by those techniques that are "special" also; like centralising preparedness and response in a separate agency.

6.4 Phase 2: Evidence Collection

Additionally, the first meeting between 30th March and 1st April 2015 saw a number of briefings and interviews, arranged by the chair (Dame Stocking) and the secretary to the panel. Briefings included scoping issues (including WHO mandate and finances, the 2011 IHR review, and WHO's relationship with UNMEER) and interviews with prominent figures in the global response such as Tony Banbury of UNMEER, David Nabarro the UN Special Envoy for Ebola, and John Ging the Director of the Coordination and Response Division of UNOCHA. The requirement to report to the 2015 WHA in May meant that even as the panel was scoping their inquiry, they already had to be assimilating knowledge. Further to this, they had not defined their methods of work (see below) which means that these briefings were chosen *before* the panel had decided on what they were investigating, further limiting scope for learning.

The first meeting also concerned the methods of work for the panel. In this decision, we see yet more individual agency for the chair. Interviewee 056 notes that "Dame Barbara was insistent that we do some on the ground fact finding" and interviewee 009 said that "[Dame Barbara] was not prepared to do a report when we hadn't visited the countries." This extension to the methods of work - especially given interviewee 009's earlier comment "I think what they thought was that they might just put a bunch of people in a room for a day" - demonstrates how the panel clearly wanted to collect more information and do more than what WHO expected of them.

The second meeting took place on the 19th April to the 21st April 2015, just 18 days after the first. This meeting was a further set of presentations on the Global Health Emergency Workforce & Contingency Fund, and Communications for Ebola Response as well as meetings with MSF, IFRC, International Organization for Migration, and the Steering Committee for Humanitarian Response, the International Council of Voluntary Agencies, and Save the Children. While the first meeting's evidence was arranged by Dame Stocking and the panel's secretary, this second meeting had evidence arranged according to what was requested by the whole panel.

Subsequent to this the Panel went on site visits to the three most affected countries as well as to the site of the WHO African Regional Office (AFRO) in Brazzaville, DRC. During these visits, the Panel spoke to WHO Country Officers, partners, UN staff, and

MoH staff (Interviewee 057). Interviewee 009 noted that "at country level, I don't think we saw quite as many people as I would have liked ... but we got what we needed from each country." Interestingly, then, while the panel did not get the data it 'wanted' it did get what it 'needed' - suggesting that more would have been useful for answering some questions but that their central narrative was already agreed upon before they collected data and that confirmation bias played some role in evaluating the evidence.

On this, we see a sparing use of evidence in the report, with an intense use of evidence in its section on community involvement. Outside of the community involvement section, the report begins with what Andrew Brown calls "claims regarding its *comprehensiveness*" (original emphasis Brown, 2004, p.100). In the first paragraph of the main report text, the panel says how it "reviewed many reports and met with key people within and outside WHO, including senior WHO staff, representatives of the United Nations Mission for Ebola Emergency Response (UNMEER), international nongovernmental organizations and Member States" (World Health Organization, 2015e, p.9). Additionally, the report makes a number of references to what "The Panel heard" on "country offices' frustration at the lack of response from headquarters and regional levels" (World Health Organization, 2015e, p.19) and on how "WHO's role in research and development for potential Ebola therapies and vaccines was a distraction from the response" (World Health Organization, 2015e, p.21).]

Over the entire report, the panel references its evidence directly only eight times. Three of these eight occur in consecutive paragraphs in the "community engagement" section. The report makes statements like "during the Panel's visit there, it was clear that communities still have not been fully engaged" (World Health Organization, 2015e, p.20). There are also quotes from a Medical Anthropologist and a Liberian community leader to demonstrate how "engagement with local community leaders is essential" (World Health Organization, 2015e, p.20) and the "absolute necessity of community engagement in a public health emergency" (World Health Organization, 2015e, p.20).

When asked about this, Interviewee 009 explained that the Panel "were concerned to make sure the community had a voice." On the sparse direct evidence for other aspects of the report Dame Stocking noted that these were areas "where voice had been or would be heard in other ways." This explanation hints at a need for additional evidence when it comes to topics outside of the Global Health Security Paradigm. This will be explored later in the section on report process.

A large effort was made to get country visits into the methods of work for the panel,

but then the information and evidence gained form these were only cited in one section. Further to this, while the country visits were fought for, they proved useful only up to what was necessary from them - suggesting a limited use of evidence to inform the learning process. This is particularly important given the limited time scale and scope for the collection and evaluation of the evidence.

6.5 Phase 3: Solidifying a Narrative

The third phase began prior to the Panel presenting its preliminary findings to the 68th World Health Assembly (WHA68). This, again, underscores the absolute time-pressure of this panel. The 68th World Health Assembly was held from the 18th to the 26th of May 2015, and the panel was created on the 25th of January 2015. This meant that in *four months* WHO had to convene the panel, the panel had to meet, country visits had to be arranged and conducted, and a draft report had to be written. That *highly* compressed timetable limited the scope and capability of the panel to do an in depth learning process.

At the point of drafting the first report for the WHA in May, according to interviewee 009, the Panel were broadly in agreement about the shape of the report and its recommendations: "we were more or less there already, it was more the details." In particular, the interviewee notes that "it was that second phase where the debates happened because the clarity over what went wrong was agreed upon so early that it was more about what the detail of the solutions would be." The consensus and clarity that was felt early on in the first phase of the report process, then, translated to a consensus during this third phase despite a phase of gathering an array of evidence from various actors. This demonstrates how the limited scope, limited time, and low use of evidence seems to have led to the recommendations of this report.

This third phase included a third and final meeting on June 24th-25th, during which a draft report was reviewed and discussions were held about recommendations. Comparing the first report presented to WHA68 with the final report of the panel, two things can be highlighted. First, we see some initial shapes of the narrative carried over into the first report as seen in the second. This includes exceptionalising the outbreak through explanations of what made the outbreak "particularly challenging" like "the characteristics of the virus" (a virus known about for over 40 years) and "underlying mistrust within communities, highly mobile populations, and porous borders" (World Health Organization, 2015a, p.3) (a phenomenon which had also been known for many years (Hewlett and Hewlett, 2008)). This further performs the accountability function of the report by shifting

balme to the situation itself.

Further to this, we can see a focus on the role of the Member States, including the very similar sentences:

- "Health is considered the sovereign responsibility of countries, however, the means to fulfil this responsibility are increasingly global." (World Health Organization, 2015e, p.5)

- "Health is primarily the sovereign responsibility of countries, but the means to fulfil this responsibility are increasingly global." (World Health Organization, 2015a, p.5)

These considerations show a clear line through to the panel's early thoughts to its final narrative, demonstrating the limited shifting of narrative from one phase to the next.

It is clear that the thoughts of the panel and the narrative they had became more refined and confident between the two. The first report's recommendations are spread across 6 separate sections and buried within paragraphs of text, whereas the final report's recommendations are much more explicitly laid out and justifications clearly placed before recommendations under only 3 umbrellas. This signals a refinement of the recommendations into a cohesive set. Additionally, the first report notes "It is still unclear to the panel why early warnings, approximately from May through to July 2014, did not result in an effective and adequate response" (World Health Organization, 2015a, p.4). This is in contrast to the box on page 13 of the final report which details explicitly the multitude of rationales behind a lack of simply declaring a PHEIC (World Health Organization, 2015e, p.13). The panel, then, became much more refined and solidified its narrative over the course of this third phase.

When talking about the construction of this report, interviewees supported this notion of the third phase being a consensus building phase. This was, however, not always easy given the severe time constraints within which the panel were working. In discussing the final writing of the report, interviewee 009 said "WHO were pushing very hard to get the report out before the UN High Level Panel to inform the UN" and noted that they were "more worried about the timings [the Panel] were being pushed towards. I didn't feel we were ready and because the people were hard to get hold of, I didn't want the report to be me and Ilona Kickbusch." Despite support from the secretariat, the writer/ editor of the report "was sent to MERS in South Korea and it was ridiculous with myself and Ilona doing the report writing" (interviewee 009). Time constraints, then, created a large limitation to the involvement of some of the panellists in the solidifying of the narrative and final wording of the document.

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6.6   Phase 4: Dissemination and Engagement

It is clear from the interviews and from the previous chapter's exploration of the types of lessons that are codified, that there is some level of interaction between the various reports and their authors. This final phase concerns the open-ended period from a report's publication, and includes all the elements by which the members of the panel (and the document itself) disseminate the findings and engage with other panels/ practitioners/ policymakers.

On engagement with other panels, the Ebola outbreak was heavily studied and written about. Interviewee 057 notes how, after the EIAP, many others seem to produce their own reports that followed a similar narrative and made similar recommendations. Interviewee 056 notes a similar phenomenon and expands upon their common membership: "if you look at the set of 4 [the National Academies Report, the Harvard-LSHTM Independent Panel, the Interim Assessment Panel, and the UN High-Level Panel] there is a lot of overlap in membership ... there was a very small group that actually dealt with this global governance and IHR." So some cross-talk between the panels is to be expected, particularly given the frequency of member overlap.

In engaging with other panels, the recommendations that the report of the EIAP makes for the IHR Review and the UN High-Level Panel are a direct link where one panel interacts with another. Dame Stocking and Ilona Kickbusch both gave formal evidence to the IHR Review as part of their inquiry (Dame Stocking). This is where the panel's involvement ended.

The bigger difference was the UN High-Level panel which interviewee 009 lamented "they really didn't know enough to get to grips with it." Over the process of the UN High-Level Panel, Dame Stocking met with the panel a total of three times including "a second session [where Dame Stocking] came in with a group of outside experts to help them try and write a first initial draft." This high level of involvement gave the EIAP a large amount of influence over how the report of a completely separate panel was framed and written. Interviewee 009 also notes that one panellist from the UN High-Level Panel[2] said to them "I don't really know what there is for us to do there." This seeming lack of direction from one panellist, gave Interviewee 009 input over not only the evidence but the *scoping* of the UN High-Level Panel. Interviewee 009 stated "I tried to say look, you've got the power do to do those things at the UN level" indicating a clear input of the EIAP's recommendations and framing being spread to another panel's discussions.

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[2]Formally titled the UN Secretary-General's High-Level Panel on the Global Response to Health Crises

In disseminating the panel's thoughts and recommendations to the broader policy/ operational community, the official engagement activities were a media event in London and a presentation of the report at the 68th and 69th World Health Assemblies.

> "the only time I felt there was a conflict of interest with WHO was in the press
> day ... the press person of course had to be assigned from [WHO] which itself
> is a bit odd ... At the beginning of that day one of the journalists phoned and
> said 'What's WHO's response to [the report]?' and I heard her start saying
> something and I said 'you're not to say. They've got to phone Geneva and
> find out from WHO what the response is, you're working for me on the panel
> today.'" (Interviewee 009)

Additionally, Interviewee 009 noted that "they think things just self disseminate ... there's something more that could have been done." This lamentation of not fully engaging the results with the wider system was compared with Interviewee 009's experiences with other organizations where "a report was the beginning of what we did, not the end of it." Interviewee 042, a member of the Independent Oversight and Advisory Committee for WHO's Health Emergencies Program (formed as a direct result of the recommendations from the EIAP) notes how "it's not enough to have an accurate diagnosis, you also have to generate the political will to do something." In the case of other organizations, generating political will to implement the recommendations required that the report be used "as a public display of what the issues are. Prior to a report coming out ... there's the whole development of a campaign with a complete analysis of political interests" (interviewee 009). Interviewee 009 further notes that "it was odd doing all of this work with WHO because there was no support behind me for dissemination as there was for writing the report."

Interviewee 056 notes that the fear-apathy cycle (high political will during an outbreak, slipping away afterwards until the next event) is a clear barrier to the implementation of recommendations. However, Interviewees 009 and 042, both professionals in high-level humanitarian action and politics, note that this political will is not simply a passive and ephemoral phenomenon but something which individuals involved in a report can *generate*. For these two interviewees, it is incumbent on report authors and their institutions to create the political will to act upon the recommendations. However, as we see from the above the time, resources, and space to do so were not given to the EIAP by WHO. Combined with a dissemination to member states at WHA which was heavily pushed for by WHO, we can conclude that the primary purpose of the EIAP was not learning but

accountability to member states.

6.7 Summary

Having detailed the processes by which the report of the Ebola Interim Assessment Panel was constructed, we now return to the characteristics of a report that users desire:

1. The process is participatory - this ensures that stakeholders are aware of the results as well as *who* understands the results and can be approached with questions of problems

2. There is a strong evidence base - this allows users to *trust* the report's conclusions and gives users a rationale for advocating policy changes

3. The report is disseminated well - this creates both attention and awareness of the report whilst also making the authors and the knowledge more easily accessible because users will *know that it exists and is applicable to them*

This summary shall interrogate each of these characteristics in turn to examine how well the EIAP concurs.

Participatory

We have multiple examples of a lack of participation in this case. In the first instance, the report was heavily determined by the chair who pushed hard for country visits and spent a large amount of time drafting and disseminating the report. When one considers the influence that this report (and Dame Stocking herself) had on other panels and reports, it is striking that one person could have such a large amount of influence on 'the' lessons from an outbreak.

Second, when country visits were being performed, the panel members themselves admitted that they were unable to see as many people as they had liked because of the high time-pressure. In addition to this, not all panel members actually attended the country visits so the voices of those interviewed in-country were not heard by all members of the panel. That being said, the efforts of Dame Stocking to have country visits at all was an important factor in increasing the participatory nature of the report process.

From a participation point of view, the central failing here was not the panel's but the Executive Board's (EB). The panel frequently overrode the prior expectations of the EB on time frame, style of inquiry, and country visits. This improved the participation

somewhat but still created a report which had difficulty challenging GHSp which had dominated the narrative surrounding the ebola crisis.

Evidenced

The evidentiary access that this panel had should have made their use of evidence highly compelling. Instead, the methods of work are detailed in annex 2 of the report on page 27, and subsumed under a brief description of the panel's timeline and process. As noted by interviewee 009, they had a lot of access to the Director-General of WHO, to actors in-country, and to closed-door discussions with WHO staff.

This level of evidence access is not used in the report. In particular, the only area where evidence is used is when detailing lessons about community involvement, to justify a lesson that is outside of the GHSp. This indicates that evidence for lessons *within* the GHSp was unnecessary and that an assumption was made that these lessons were 'obvious' enough to not require backing.

This lack of real use of evidence, despite a large amount of access, is indicative of both the scope and time limitations presented to the panel. With only four months to prepare a draft report and a heavily WHO focused scope, the definition of what was useful evidence shrank. Evidence had to be WHO-relevant and needed to be compiled and assimilated into an already established narrative. The very use of evidence in this case was constrained and shaped by limited process and the GHSp.

Disseminated

Dissemination was admitted by interviewee 009 to be incredibly poor. As noted by the users and by interviewee 009, the report is not the end of the process, but a part of it. The dissemination is the point at which interviewee 009 felt the most conflict of interest and the most strain.

Dissemination was seemingly limited to Dame Stocking's influence on the Secretary-General's High-Level Panel, a press event in London, and the presentation of a *draft* report to the WHA in May 2015. Each of these dissemination events were incredibly high level and governance focused, with very little attempt to fully engage or advocate for operational or even country-level reform.

What the EIAP demonstrates is how the GHSp constrained the *process* of report-construction to limit knowledge accumulation outside the paradigm. The actors allowed to participate fully were only those who the GHSp values most, the only evidence that was

able to be used was the evidence already fitting a GHSp narrative, and the only actors to whom the results were disseminated were high-level actors that the GHSp considers important. Any knowledge, actors, or communities that exist outside of the GHSp were left unserved by this panel and report.

Chapter 7

Embedded Case 2: The Harvard-LSHTM Independent Panel

7.1 Introduction

The previous chapter explored in detail the context, recommendations, narrative, and process of the Ebola Interim Assessment Panel (EIAP). This chapter performs a similar analysis on the Harvard-London School of Hygiene and Tropical Medicine Independent Panel (HLIP). The aim of the chapter is to understand what the report of the panel recommends, how these recommendations are justified, and the processes by which the report came into being. This can be compared to the Ebola Interim Assessment Panel to understand how institutional context and process differences reached the same or different conclusions.

The rationale behind comparing these two cases is the highly different institutional contexts yet the highly convergent recommendations. As will be shown later in the chapter, while the processes by which the two panels came to be and the institutional structures within which they operated are different, their recommendations have similar themes. In particular a consistent fit with the Global Health Security paradigm established in Chapter 4. In exploring the convergence of these two reports to the dominant paradigm, it is therefore possible to make an argument as to how and why such a paradigm has remained dominant, despite the 2013-2016 Ebola Crisis challenging the central pillars upon which the paradigm rests.

Looking to the authors of the report, we see how it differs from the EIAP: first, we

can see that it is highly dominated by authors from the USA; second, it is a highly Academic and NGO authorship; and third, only 3 of the 22 authors come from a humanitarian background as opposed to an international relations, global health, or governance background. Comparing this to the EIAP which was balanced in terms of expertise, institutional background, and geographical background, the two are indeed very different panel compositions.

Panellist	Expertise	Institutional Background	Geographical Background
Suerie Moon	Global Governance	Academia	USA
Devi Sridhar	Global Governance	Academia	USA
Muhammad Pate	Health	Government	Nigeria
Ashish Jha	Global Governance	Academia	USA
Chelsea Clinton	Global Governance	NGO	USA
Sophie Delaunay	Humanitarian	NGO	France
Valnora Edwin	Humanitarian	NGO	Sierra Leone
Mosoka Fallah	Humanitarian	NGO	Liberia
David Fidler	Global Governance	Academia	USA
Lauria Garrett	Health	Journalism	USA
Eric Goosby	Health	International Organization	USA
Lawrence Gostin	Global Governance	Academia	USA
David Heymann	Health	Government	USA
Kelley Lee	Global Governance	Academia	Canada
Gabriel Leung	Health	Academia	Hong Kong
J Stephen Morrison	Global Governance	NGO	USA
Jorge Saavedra	Health	NGO	Mexico
Marcel Tanner	Health	NGO	Switzerland
Jennifer Leigh	Global Governance	Academia	USA
Benjamin Hawkins	Global Governance	Academia	UK
Liana Woskie	Global Governance	Academia	USA
Peter Piot	Health	Academia/Government	Belgium

Table 7.1: Panellists on the Harvard-LSHTM Independent Panel according to the authors of Moon et al. (2015).

Further to this, as we shall see in the next section, the HLIP was *not* an official ac-

countability exercise, it was not mandated to hold institutions or organizations to account for their actions. It was also not necessarily a performative report - it did not need to be *seen* to be doing something in order to re-legitimate a social institution.

These very different institutional and compositional contexts, however, somehow led to *very similar* recommendations coming from both panels. Using the same table from chapters 5 & 6, we can see in table 7.2 that the lessons hit upon by the HLIP are less expansive than those of the EIAP but that it is at the expense of lessons typical of the operational documents and the academic documents. Somehow, given drastically different contexts, and an apparently 'independent' mandate, the priorities of this panel have ended up very similar to those of the EIAP. This chapter explores process from this angle, looking at how processes of report construction lead to this phenomenon.

Five Most Codified Lessons from Each Sample Appearing in EIAP		
Academic Sample	Operational Sample	Policy Sample
Weak In-Country Health Systems	Training	*Coordination*
Diagnostics	*Communication*	*Communication*
Rapid Response	Health Emergency Reserve Force	*Accountability*
Community Trust of Responders	**Community Involvement**	*Health Systems Strengthening*
Patient Isolation	Personal Protective Equipment	Training
# of lessons: 3/5	# of lessons: 1/5	# of lessons: 4/5

Table 7.2: Five most codified lessons stratified by sample. Lessons in bold appear in the report of the EIAP. Lessons in italics appear in the HLIP.

The chapter proceeds in much the same way as the previous chapter; beginning with an exploration of the context of the HLIP, it's slightly larger time-frame and wider institutional context as compared to the EIAP. Next is an exploration of the recommendations and narrative codified in the report of the HLIP, comparing it to that of the EIAP. Finally, the chapter moves on to explore the processes and evidence used to reach the narrative and recommendations, comparing the extensive use of primary data and testimony in the EIAP with a great reliance on written evidence and peer review which functioned as the justification for the HLIP.

7.2 Report Context

This section explores the context within which the report of the Harvard-LSHTM Independent Panel on the Global Response to Ebola (HLIP) was produced. The section examines the outbreak context and the public media context, comparing it to the EIAP's context. The section then examines the other reports produced during the creation of this report, looking at the synergy between each of the various reports. This contextual discussion will then pave the way for the discussion of report content and process in the following sections.

The epidemiological and media context for the HLIP is very similar to that of the EIAP. Looking to figure 7.1 it is clear that the instigation of the report occurred at the peak of the Ebola Crisis and that it was published as the crisis was waning. In particular discussions surrounding the creation of the HLIP were taking place as official case and death reports were in an exponential growth phase. Indeed, this peaking crisis, as we will see later in this chapter, formed the impetus for the panel's establishment.

Crisis as an impetus for forming a panel, particularly forming an *independent* panel, places a very reactionary and fast-paced frame upon the process of the panel from the very beginning.

> "it was in the heat of the crisis [and] we felt it was important to put in place an effort that would be able to take a step back and *assess how things got so bad and what went wrong*" (Interviewee 031, emphasis added)

This impetus of crisis immediately frames the panel as responsive and focused on the dominant issues at the time of establishment.

Again as with the EIAP, there was a significant amount of negative press levelled at WHO around the time of the HLIP's instigation. One CNN report discussed how "WHO missed opportunities to stop the spread of the disease after it was first diagnosed ... WHO experts also failed to recognize that traditional containment methods wouldn't work" (Sanchez, 2014). Even then-Director-General Margaret Chan admitted to Time magazine that WHO "did not match the scale of the outbreak ... all of us underestimated the complexity" (Walt, 2014). This negative media attention fuelled the panel to take up review work that would be *independent* of WHO's institutional influences.

This can also be seen in the coverage of the panel's report, once published. The report was characterised in different ways by multiple sources: one article notes how the report describes how WHO "mishandled the crisis" (Ap, 2015), another describes WHO's
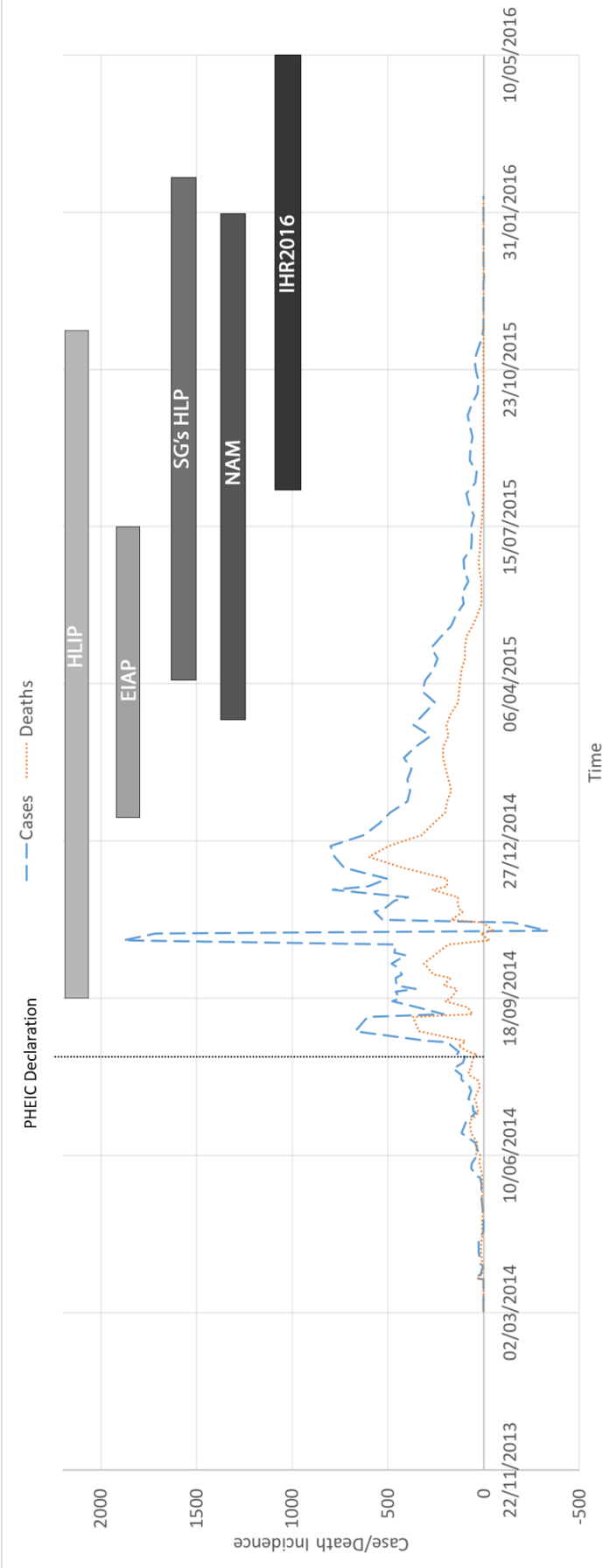
Figure 7.1: Plot of case and death rates over the course of the Ebola Crisis (adapted from data in Centers for Disease Control and Prevention (2016)). Each box represents a major international panel: HLIP, the Harvard-LSHTM Independent Panel; EIAP, the Ebola Interim Assessment Panel; SG's HLP, the UN Secretary-General's High Level Panel; NAM, the National Academies of Medicine Panel; IHR2016, the Review of the Functioning of the International Health Regulations in the Ebola outbreak. Box positions represent the beginning and end of the processes.

"catastrophic failure" (Boseley, 2015a), and another quotes the report as calling WHO's response an "egregious failure" (Plucinska, 2015). This follow through with a narrative that is highly critical of WHO highlights an overarching contextual atmosphere that was hostile to WHO during the production of the report of the HLIP.

Finally, the context of the report of the HLIP included a number of other reports. Looking again at figure 7.1, four other major panels can be seen concurrently working and compiling their own reports. Later, the chapter will examine how panel cross-talk and member crossover may have contributed to consensus across the the reports. Here, however, it is key to note that each of the panels were aware of one another. This is because awareness of one another gave each panel impetus to find their own niche.

> "We wanted to make sure that we were addressing what we saw as most important from a global governance perspective but also where wasn't it being addressed." (Interviewee 040)

This awareness of other panels, then, allowed the HLIP to focus on areas that other panels were not going into detail about.

Contextually, then, the HLIP was established at the height of the outbreak, a short time after the PHEIC declaration. During this early period of the HLIP, media attention was highly critical of WHO's response. Additionally, much of the media attention upon publication of the report focused on the panel's criticism of WHO's early response. The panel was also operating an a context in which multiple other panels were putting together their own reports which allowed the HLIP to focus on some areas that were not being examined by other panels.

7.3   Phase 1: Scoping and Panel Selection

As in the previous chapter, the Harvard-LSHTM Independent Panel can be split into four phases: Scoping & panel selection; evidence collection; solidifying a narrative; and dissemination. This section will explore the scoping & panel selection phase of the HLIP.

The story of the HLIP begins in late 2014 with the Ebola Crisis at its peak: death rates had exceeded 1000, a PHEIC had only recently been declared, and media attention was replete with the failures of WHO. The early part of this panel began with a conversation between Suerie Moon and Julio Frenk wherein it was noted:

> "it was clear that the Ebola crisis had exposed and illustrated I think many of the fault lines in the global health system - as we conceptualise and call it

- that we had been studying and writing about previously." (Interviewee 031)

This initial discussion guided the construction of the report. In particular the decision to create a panel that was independent was motivated by

> "a frustration with the coordination with the response and timeliness with a number of different things" (Interviewee 041)

. This reveals two things about the origins of the HLIP. First it reveals the desire to *do something* as the motivator - note Interviewee 041's use of the word 'frustration' - which, as Birkland (2009) notes not only elevates the crisis but also "the manifold constructions of the issue on the agenda" (Birkland, 2009, p.148). Second, the "manifold constructions" in the case of public health emergencies are revealed by Interviewee 031 to be subsumed under a vision of "the global health system." This singular vision, as has been demonstrated above and in previous chapters, is the Global Health Security paradigm. This emergency-mode desire to do something, then, elevates and consolidates the GHS paradigm in the case of the HLIP.

The first part of this theme focuses on creating a Global Health Committee for the UN Security Council. The panel first note that "[in] recognition of health as an essential facet of human and national security, the UN Security Council should establish a Global Health Committee" (Moon et al., 2015, p.2215). This committee would also be responsible for "alleged non-compliance with International Health Regulation provisions on trade and travel measures" (Moon et al., 2015, p.2215). This framing of health as "an essential facet of human and national security" is not new, however, a Global Health Committee on the UN Security Council would ensure that global health was *permanently* securitised.

In discussing WHO, the panel note that "WHO is an essential hub in the global system" (Moon et al., 2015, p.2216). The panel then outline four core functions for WHO: "support governments in building national core capacities ...; assess and provide rapid early response to outbreaks ...; establish technical norms, standards, and guidance; and convene actors to set goals" (Moon et al., 2015, p.2215). The panel then moves on to discuss how "WHO's failings on these core functions during the Ebola outbreak have now produced an existential crisis of confidence" (Moon et al., 2015, p.2216). This representation of WHO as central to the global health system is a standard facet of the GHS paradigm.

This standard facet of the GHS paradigm is extended by the recommendations made by the panel. The panel first recommend that WHO "substantially scale back its expansive range of activities to focus on core functions ... member states should shift most of its financing to assessed and non-earmarked voluntary contributions" (Moon et al., 2015,

p.2216). Asking for a refocus of WHO onto its core capacities (all focused on disease outbreak response) by providing a substantial boost and shift in the way in which WHO is financed implies that the central rationale for WHO not acting was financial. As the panel has already noted, however, the reasons for the lack of action were not financial; "several reasons for the delay including concerns about political opposition from west African leaders, economic ramifications, and a culture within WHO discouraging open debate" (Moon et al., 2015, p.2210). This increase in financing - and given its un-earmarked nature, autonomy - for WHO, along with its refocus on epidemic disease extends further the WHO centrality pillar of the GHS paradigm.

Recommendation eight, the first under this theme, securitizes infectious disease outbreaks further. The recommendations calls for "the creation of a Global Health Committee as part of the UN Security Council" (Moon et al., 2015, p.2205). The creation of this committee would consistently raise the profile of health emergencies to the UNSC which implicitly securitizes the emergency.

The second recommendation under this theme (recommendation eight) asks that WHO focus on four core functions for outbreak response "supporting national capacity building building through technical advice; rapid early response and assessment of outbreaks ...; establishing technical norms, standards, and guidance; and convening the global community to set goals, mobilise resources, and negotiate rules" (Moon et al., 2015, p.2205). This is notably at the expense of WHO's non-outbreak functions as the recommendation requests that WHO "maintain its broad definition of health but substantially scale back its expansive range of activities to focus on core functions" (Moon et al., 2015, p.2205). This focus on infectious disease outbreaks is a hallmark of the securitization of health (Elbe, 2005, 2006, 2011) which fits it directly in the Global Health Security paradigm.

The final recommendation made in the report concerns "good governance reforms" for WHO including a freedom of information policy, an Inspector General's office, and human resources reform. The recommendation further asks that "governments should finance most of the budget with untied funds in a new deal for a more focused WHO" (Moon et al., 2015, p.2205). This recommendation requests extensive reforms to WHO but in response, WHO gains a large amount of autonomy through *untied funds*. While made with a caveat of good governance reforms, this recommendation still expresses a desire for more WHO autonomy to perform what is perceived as 'core functions', and as such fits with the Global Health Security paradigm.

Next it was incumbent upon the instigators of the panel to choose panel members.

The first step, as put by Interviewee 041, was to approach Peter Piot[1] to chair the panel.

> "we wanted to engage in a high level leadership and partnership role ... [Prof. Piot is] a known and respected clear thinker" (Interviewee 041)

After this, other panellists were chosen based on being leaders as well as diversity of academia, think-tank, and civil society interests (Interviewee 041).

> "Definitely one of the criteria we have for choosing the panel members were not only people who had a certain level of expertise but I think whose names carried weight and who would be listened to because of their reputations." (Interviewee 031)

When asked about how they were recruited and why, however, the theme of personal networks came to the fore with panellists being selected by knowing other panellists or by being aware that work is going on in this area. Additionally, many were already big names in global health;

- Laurie Garrett has won a Pullitzer Prize, a Peabody Award, and a Polk Award for her journalism on global health and 9/11

- David Heymann had been a prominent member of the IHR revisions

- Eric Goosby was UN Special Envoy for AIDS

- Lawrence Gostin and David Fidler had written extensively on the legal side of the IHRs

- Devi Sridhar was involved in a prominent project on the World Bank and its involvement in Global Health

- Chelsea Clinton brought her prominence as Vice President of the Clinton Foundation

While this personal network and prominence connection ensured that the panel operated smoothly and gained a great deal of attention, the choosing of panel members who are already entrenched in the GHS paradigm, and in particular the global health governance community that supports it, further entrenched the GHS paradigm in the panel's report. The organisers of the panel did, however make an attempt to have west Africans on the panel to introduce an on the ground perspective.

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[1] Professor Peter Piot is the Director of the London School of Hygeiene and Tropical Medicine (LSHTM), a renowned advocate and leader in HIV/AIDS, and - most importantly here - was a member of the Institut Pasteur team which responded to the very first outbreak of Ebola Virus in Zaire (now the Democratic Republic of Congo) in 1976.

"We faced a challenge identifying experts from the west African region partly because they were really busy with the actual response, and partly because frankly those networks are not as well developed. (Interviewee 031)

In an attempt to allow for west Africans to participate while respecting their time for the response, panel members were allowed to participate remotely. We will return the the issue of remote participation later in this section when we explore the meetings themselves. In total only 3 panel members (of a total of 22 authors, 14%) were west African: Mosoka Fallah, Valnora Edwin, and Muhammad Pate.

Finally, one key issue raised can be demonstrated with Julio Frenk's recusal from the HLIP: panellists do not necessarily sit on only one panel. Additionally, as we shall see later when discussing dissemination, each panel also is in communication with other panels. What we see, particularly looking at figure 7.4, is the extent of the panel crossover: the HLIP, the EIAP, and the NAM panel all shared membership with Julio Frenk being involved in some way with all three of these panels. This phenomenon is particularly worrying given the consensus across the reports demonstrated by Moon et al. (2017) and Gostin et al. (2016).

"Yeah is created it [consensus], it helped I suppose. It also helped create confusion because ... you couldn't serve on two or three of these panels and be totally consistent." (Interviewee 044)

"I hope we're not sort of coordinating, like we were supposed to be different groups although there's clearly cross-membership so that mights have influenced it ... I guess what happens is you know you move in the same circles and people start thinking the same way or that there is a pure truth out there that somewhere that we've all gravitated towards." (Interviewee 007)

In the view of some report authors, then, this phenomenon of individuals serving on multiple panels - particularly given that those individuals doing so were not the west Africans - may have been a factor in causing the consensus across the reports. This beginning phase, then, saw the instigation of the panel which was explicitly scoped under an emergency-mode mentality. This desire to *do something* then elevated a singular vision of the global health system. The choosing of panel members was motivated by their prominence and a desire to remain independent. The choosing of panel members was also dependent upon personal networks which limited the number of west Africans offering perspectives on the outbreak. Finally, a number of the panel members served on, or gave

evidence to, multiple commissions. This may have contributed to the consensus across the various panel reports.

7.4   Phase 2: Gathering Evidence

The gathering of evidence came from a number of sources: first, Suerie Moon and Liana Woskie produced a great deal of background material before the first meeting; second, the panel relied on the knowledge and experiences of the panel; third, after the first meeting, additional content was produced alongside a first draft of the report. This section details these evidence gathering steps surrounding the first meeting.

In the first gathering of background information, the first aim was to compile a timeline of the outbreak "to equip the panel members at that first meeting with a clear and detailed picture of what had been happening" (Interview 031). Following this Suerie and Liana "earmarked a couple of high-level topics that seemed to be issues" (Interviewee 041). This initial constraining of the agenda may have led to a focusing on particular facets of the response, as well as into a particular frame of understanding. Evidence for this, however, is mixed. While one interviewee describes the below:

> "One of my main worries was that this group was prisoner to a bunch of academic constructs ... just a bunch of 'oh this just confirms what we knew before which is a, b, c, and d'" Interviewee 044

On the other hand another interviewee notes:

> "I think what the organising committee was trying to do was to elicit from the panel what they thought the key issues were but also to set some parameters around what it was we were going to focus on" (Interviewee 007)

So on the one hand, this narrowing down of frames sets parameters on discussions and allows for a more efficient production of recommendations. On the other hand, the constraining of debate *a priori* makes it difficult to escape these pre-set frames and discuss topics outside of a particular scope. Additionally, evidence was collected on these key topics, so topics outside of these areas would have required a significant level of effort to reshape and introduce.

In further adding evidence to the panel, the membership themselves were considered a major source of experience and evidence.

> "we ended up relying quite heavily on the panel members themselves, their own knowledge, their background knowledge, their personal networks ... there are

> pros and cons to that approach but that's one of the reasons why we could not look at certain questions such as what happened on the ground" (Interviewee 031)

In justifying this gap in the HLIP, however, the interviewee notes:

> "I think the Stocking Panel [EIAP] that was their role. To investigate what happened inside the organization ... that's something we were not in a position to do" (Interviewee 031)

This constraining of evidence, and acknowledged limitation in the report's process is made with the implicit knowledge that other reports will fill in the gaps elsewhere.

Another interviewee, also noted the utilisation of panel members as a major evidence source.

> "are we just going to sit around and talk? to me I just thought what are we going to get that's hard and fast data? .... Although it was quick in some ways, I don't think it was dirty ... The people together with their vast experience and drawing together. So it wasn't as if we were starting from scratch." (Interviewee 006)

Again, there is an acknowledgement of the limitations to relying so heavily on panel members as sources of evidence. However, it must also be acknowledged that the composition of the panel was oriented towards diversity of experience and did have many renowned experts and knowledgeable individuals.

For example, a recommendation on promoting early reporting of outbreaks is reminiscent of the 2003 SARS outbreak. As seen in chapter 4, the SARS outbreak was a locus around which the Global Health Security paradigm crystallised. In particular, the response to SARS became the model around which the International Health Regulations were revised in 2005 (Kamradt-Scott, 2015) as well as providing the impetus for the acceleration of revisions that had been taking place for the better part of a decade. China's early reticence to report the outbreak's full extent led later to WHO leveraging its knowledge (gained via non-governmental sources) to pressure China into officially reporting the outbreak (Fidler, 2004). This links the lessons from the origination of the GHS paradigm with the knowledge codified by the HLIP.

However, given that the legal side of the IHRs are a core part of two panel members' academic portfolios (Lawrence Gostin and David Fidler), it is clear to see a link between the panel members' prior knowledge and the recommendations that get laid forth.

Furthermore, this process of using panel members as sources of evidence, however, assumed two things: panel representativeness and panel engagement. As we have seen in the previous section, panel representativeness was not necessarily an assumption that could be made. One interviewee noted that

> "you had people who were really coming from a domestic perspective and trying to bring everything to congress this and president that, versus people who have never set foot here and wondering why we kept talking about the United States when the epidemic was in west Africa"

This lack of representativeness, then, clearly transformed the way in which the discussions progressed.

On panel engagement, a similar situation exists, particularly when it comes to inequities produced through teleconferencing.

> "For the folks in Liberia and Sierra Leone who were trying to be involved and you know 8 hours of Skype with their poor cell phone signals and their poor internet, intermittent attendance, I can't imagine how difficult it must be for them, one side communicating and often sending messages, well when your signal cut out that was when Peter Piot said XYZ" (Interviewee 036)

What is also interesting is the comment below:

> "a few people on the phone and the chair trying to be inclusive, including them in the conversation. It was handled well, I don't think anybody felt they couldn't contribute if they wanted to." (Interviewee 037)

Not only was it difficult for those teleconferencing in - and in particular the west Africans teleconferencing in - but some panel members were unaware of the inequity in panel engagement that had been occurring. As put by multiple interviewees, there is no replacement for in-person discussions and engagement (Interviewee 036, Interviewee 037, Interviewee 039, Interviewee 041).

Gathering evidence, then, is constrained by multiple factors. First, the initial gathering of documentary evidence introduced subjective judgements from Suerie Moon and Liana Woskie in what the overarching areas of focus were. Second, an unrepresentative panel meant that gather evidence via a panel's experience biased the evidence and results gained from the panel. Finally, panel engagement was unequal because of teleconferencing panel members as opposed to having all members in person.

7.5   Phase 3: Solidifying a Narrative

In formulating a narrative both meetings played a key role in setting priorities. In particular, the two meetings were used to set priorities: the first was used to give broad indications of themes and the second was used to give comments on a first draft that had been prepared by Suerie Moon, Jen Leigh, and Liana Woskie. Each of these meetings were plagued by the same inequalities of representativeness and of engagement discussed earlier.

One of the earlier decisions that was taken by the organizing members of the panel was the decision to publish in the Lancet.

> "it was good to have it in the Lancet because then it required peer review"
> (Interviewee 005)

This borrowing of legitimacy from the notion of peer review and the Lancet as a leading medical journal was, however, something that some report authors were reticent towards.

> "from the very beginning they had the goal of publishing in the Lancet ... it was a group of academics and they already had an academic goal" (Interviewee 034)

> "no one was thinking through very clearly who cares whether the Lancet puts it out? What is the price going to be of putting it out through the Lancet? ... this thing is shipped around to a bunch of anonymous peer reviewers. That's an academic process that was completely inappropriate for this particular purpose." (Interviewee 044)

On the one hand, some members (like interviewee 005 above) thought that the Lancet and peer review was a useful tool for establishing legitimacy. On the other, the cost of having editors and peer reviewers, whose names are not cited as authors of the piece and therefore unaccountable was recognised by other interviewees.

Additionally, publishing in the Lancet created an artificial limit on the length of the article that significantly constrained the writing of the report.

> "it just became very hard to figure out a succinct way to talk about all these and navigate the word count limits imposed by the Lancet" (Interviewee 036)

> "the report had to be cut by about half, it was 8000 to about 3000 or 4000 words" (Interviewee 040)

"The Lancet was quite strict on when they decided to accept it. They gave us a word limit, so same thing, you have to be short and sweet" (Interviewee 031)

"We first had them in the London meeting so Pamela Das [Senior Executive Editor, *The Lancet*] and Richard Horton [Editor-in-Chief, *The Lancet*] both came by and observed the meeting. The goal of that was so that they could get a sense of what shape this might take because at this point it wasn't entirely clear what the final message would be. The Lancet broadly has been quite active in the global health space and there was a lot of potential for it to be politically sensitive and ... I think it ended up in a relatively moderate place" (Interviewee 041)

Publishing in the Lancet did have some problems with keeping the report under a strict word limit as well some possible input from Editor-in-Chief Richard Horton, another renowned name in global health but not an explicit author of the report.

The decision to publish in the Lancet also seems to have been taken almost unilaterally in the earlier stages of producing the report.

"it was like there was a decision made at the front end of this process that somehow it was terribly important that this thing bear the imprimateur of the Lancet" (Interviewee 044)

"from the very early stages the Harvard folks had gained a publication commitment from Richard Horton and the Lancet, and that was where the report was going to end up" (Interviewee 036)

This highly controversial and impactful decision had clearly been taken without a full consultation with the panel.

Finally, some members of the panel were given the remit to write and edit large sections of the report.

"You've got to defer. These guys have written extensively on the subject ... a few of us had written on WHO and I was given the task of drafting that section so Suerie and I worked together" (Interviewee 006)

"it would be for very limited sections of text but you know 'okay you're more of a subject matter expert, rewrite this' and then we'll send that to the group and they would just approve or not approve" (Interviewee 040)

This practise on the one hand allows for a more expert writing on a particular subject, however, it also precludes others from making comments, simply providing an "approve or disapprove". This is also a particularly unequal practice given the expertise of the west Africans has no specific section in the report and thus these individuals did not pen sections of the report.

In solidifying a narrative, then, the HLIP's decision to publish in the Lancet formed a significant barrier to detailed examination of many topics. In addition a lack of focus on the expertise provided by west Africans, the act of giving whole sections of the report to subject matter experts amplified the effect of the lack of representation on the panel. As this and previous sections have shown, representation on panels is not solely about choosing individuals but also about allowing for *meaningful engagement* in equal ways for each panel member.

7.6   Phase 4: Dissemination and Engagement

This final phase discusses the ways in which the members of the HLIP disseminated and engaged the recommendations and findings of the panel and its report. In particular, the phase will explore engagement with global health pedagogy by the panel's Principal Investigators and a presentation given to WHO's Executive Board in January of 2016.

Suerie Moon and Ashish Jha were both invited by the WHO Executive Board to present the panel's findings.

> "They had invited us, NAM, I think European Commission ... to come and present during the EB meeting which I was surprised by ... at the EB in particular we focused on the WHO-related recommendations of which there were four, and we only had five minutes" (Interviewee 031)

Presenting at the Executive Board gave the panel the opportunity to directly influence policy at a level they had been aiming.

In addition to engagement with the level of policy that they had aimed at, the Prinicipal Investigators of the HLIP also engaged with the teaching of global health and students of global health. This was done through multiple events which engaged students and the media at the Center for Strategic International Studies (the institution of one of the HLIP's members, J. Stephen Morrison), as well as an event organised at the Graduate Institute in Geneva (at which Suerie Moon now teaches).

Additionally, the Principal Investigators produced a free online course as part of the

EdX platform (HarvardX, specifically) which allowed for engagement of students and the public outside of traditional pedagogical structures. This course included not just members of the panel (Devi Sridhar, Chelsea Clinton, Lawrence Gostin, David Fidler, Muhammad Pate) but other individuals involved in the response who were not on the panel like Paul Farmer, a noted medical anthropologist, Allan Brandt, a medical historian, and other frontline personnel. This course allowed for a deeper engagement of the panel's content and a deeper explanation of the background. It also allowed for the panel to incorporate the findings of the HLIP into teaching global health students, further entrenching the GHS paradigm into knowledge accumulation.

7.7 Summary

Having detailed the processes by which the report of the Harvard-LSHTM Independent Panel was constructed, we now return to the characteristics of a report that users desire:

1. The process is participatory - this ensures that stakeholders are aware of the results as well as *who* understands the results and can be approached with questions of problems

2. There is a strong evidence base - this allows users to *trust* the report's conclusions and gives users a rationale for advocating policy changes

3. The report is disseminated well - this creates both attention and awareness of the report whilst also making the authors and the knowledge more easily accessible because users will *know that it exists and is applicable to them*

This summary shall interrogate each of these characteristics in turn to examine how well the HLIP concurs.

Participatory

Participation in the HLIP on the surface seems positive. In particular we see three west Africans and a good deal of civil society actors - all actors typically underserved by the GHSp. Furthermore, the independence of the panel from influences of WHO, UN, and other international organizations did give the panel scope to be much more critical than other reports may have been.

In practice, however, the participation of the west Africans and the civil society actors was limited by their capacity to physically attend the meetings. Poor internet and phone

connections, no travel bursaries, and the ongoing outbreak itself severely limited the capacity of these actors to fully engage with the rest of the panel and have their voices be heard.

In addition to this, and linking with the evidence characteristic, individuals outside of the panel were not given an opportunity to provide evidence or comment. On the ground actors were not interviewed and community groups were not engaged by the panel. Actors outside the GHSp framing were, again, left unheard.

Evidenced

Evidence for the HLIP derived primarily from news and academic publications as well as the experiences of the panel themselves. The presentation, unlike the EIAP, is highly evidenced due to its publication in *the Lancet* medical journal which had a peer review process and requirements for citations to back-up claims.

The kinds of evidence used, however, are somewhat superficial. As described above, the engagement of those panel members actually on the ground was poor which means that evidence from the ground was limited. Furthermore the lack of community groups meant that the data and experiences from communities were absent.

In addition to this, evidence used by the panel was highly criticised by users at a policy level (the audience for the report) because it did not engage with the realities of UN and WHO operations. The authors of the report relied heavily on news articles and academic publications which both have their own standards of evidence for reporting which limits the possible uses therein. This lack of access to in-depth sources at the level to which they were aiming their recommendations had an effect on how well the report itself was received.

Disseminated

Dissemination for this report took the form of a presentation to the Executive Board of the WHO in January 2016, its publication *the Lancet* academic journal, a number of press events, and a HarvardX course about the Ebola Crisis. Each of these was aimed at various audiences.

The publication of the report in *the Lancet* was primarily a move to give the report some weight and authority. It's publication in an academic journal, however, means that its impact can be directly measured through citations and impact factors. Additionally, *the Lancet* is a journal which is read by a large proportion of medical professionals and so

the report had a large reach.

The presentation to the Executive Board at WHO was to brief them on the findings of the report. This direct feed-in to policy was exactly the aim of the report and it has been cited by WHO as one of the drivers for its reformed Health Emergencies Programme (Abdulla et al., 2015).

Again, however, we can see how dissemination is limited to those within the GHSp framing: the Lancet is regularly read by a great deal of clinical and public health practitioners - although others do read the journal, it is primarily a *medical* journal; and briefing the EB is directly linked to WHO authority strengthening, a core tenet of the GHSp.

Throughout the process of the HLIP, opportunities to cahllenge the GHSp were seemingly missed. By committing to publication in *the Lancet* medical journal; an audience, evidence-base, and peer review process was set in stone early in the process. Through a lack of full engagement with constituencies outside of the GHSp, evidence and framings from outside the GHSp were lost. While superficially different to the EIAP - in terms of panel size, membership, and scopes - the HLIP faced very similar challenges in terms of the Globa Health Security paradigm constraining and shaping knowledge codification.
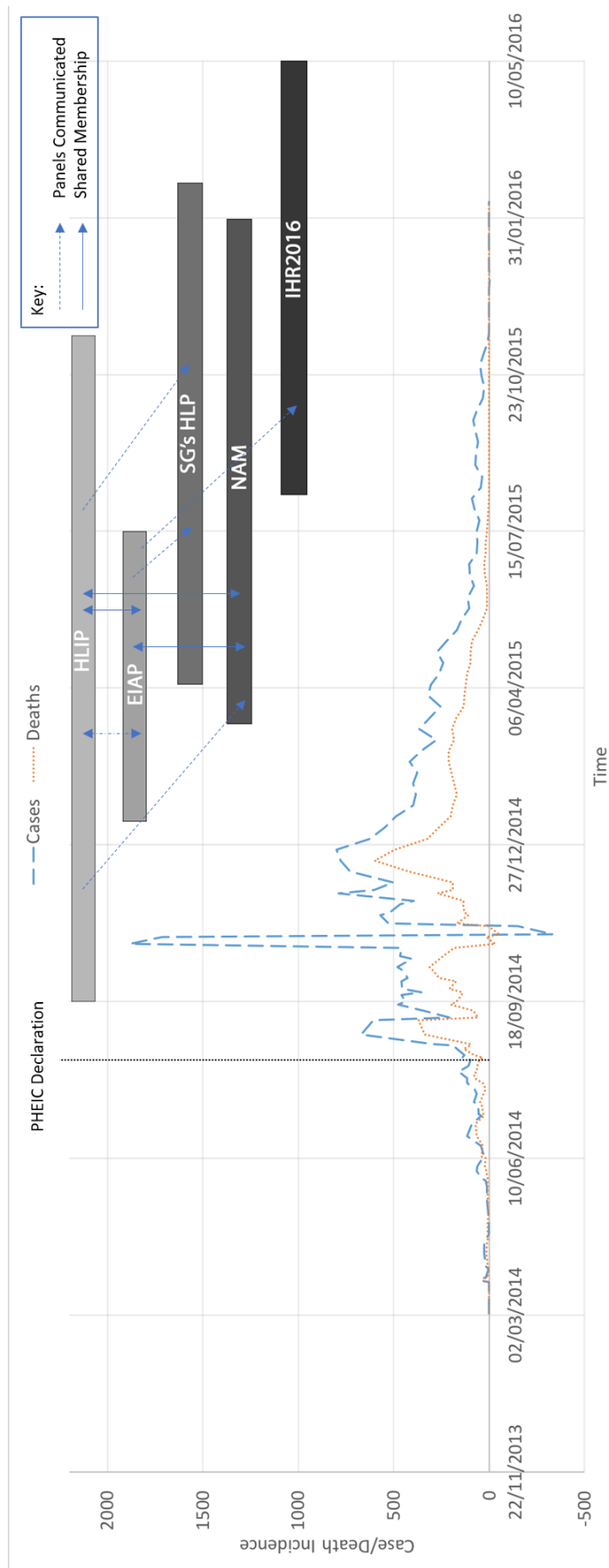
Figure 7.2:: Plot of case and death rates over the course of the Ebola Crisis (asapted from data in Centers for Disease Control and Prevention (2016)). Each box represents a major international panel: HLIP, the Harvard-LSHTM Independent Panel; EIAP, the Ebola Interim Assessment Panel; SG's HLP, the UN Secretary-General's High Level Panel; NAM, the National Academies of Medicine Panel; IHR2016, the Review of the Functioning of the International Health Regulations in the Ebola outbreak. Box positions represent the beginning and end of the processes. Dotted arrows represent communication between panels (double-ended arrows for two-way communication, single-ended arrows for one-way communication) and solid arrows represent that some individuals sat on both panels.

Chapter 8

Discussion and Conclusions

8.1 Introduction

Over the course of this thesis it has been made plain that the accumulation of knowledge from disease outbreak responses is mired in problems. Outbreaks are never exactly the same as one another - different times, different places, different contexts, different pathogens. There are myriad dimensions on which one could possibly map any single outbreak on, assuming agreement on the boundaries of an outbreak.

As has been shown throughout this thesis, these problems seem to have led to the development of a path-dependency in how outbreaks are conceptualised and discussed. This Global Health Security paradigm is focused heavily at the global level, often privileging national level policies aimed towards a common global good. The three key, response tenets of this paradigm are: (i) a global surveillance regime, aimed at producing rapid, containment-oriented responses to disease outbreaks; (ii) a central, authoritative World Health Organization with the resources and will to act; and (iii) a research and development system capable of rapidly identifying a pathogen and producing vaccines, diagnostics, and therapeutics ready for deployment in a crisis.

Theoretical understandings of learning and knowledge accumulation have allowed us to conceptualise knowledge processes as cyclical (Kolb, 1984; Argyris, 1999; Argote and Miron-spektor, 2011). In each cycle we see that knowledge is created from task experience and knowledge is re-used in new task experiences (Kolb, 1984; Argote and Miron-spektor, 2011). Disease outbreaks tend to break this cycle because of their lack of continuity, complexity, and stability; they do not occur sequentially one straight after the other (Kouzmin et al., 1995), they do not occur for the same people (Moynihan, 2008), and they are not necessarily reducible to simple factors (Comfort and Louise, 2004). However, the

production of reports and papers (i.e. the production of codified knowledge) is theorised as a means to overcoming these barriers due to their transferability across time, space, and persons (Zollo and Winter, 2002; Echajari and Thomas, 2015).

These so-called 'lessons learned' reports have been studied previously. They are noted to perform three main functions: holding individuals or institutions accountable (Gephart et al., 1990), re-establishing the social order & restoring trust in social institutions by being *seen* to be 'doing something' (Brown, 2000, 2004), and as a tool for learning (Birkland, 2009). While their role in accountability and restoring trust has been explored by other authors (Gephart et al., 1990; Brown, 2000, 2004; Birkland, 2009), their full role in learning and knowledge production has not been. Although Birkland (2009) discusses them as 'fantasy documents' he does not theorise this as a *knowledge* product but a *performative* product.

To explore the production and use of these lessons learned documents in knowledge accumulation from disease outbreak responses, The thesis focuses on the 2013-2016 west African Ebola Crisis. This was because of its three-fold exceptionalism: the outbreak crossed borders and killed unprecedented numbers of people (Centers for Disease Control and Prevention, 2016); the outbreak infected individuals from the US and western Europe (Anderson-Fletcher et al., 2017); and the outbreak challenged the Global Health Security paradigm which has dominated global health thought for 20 years.

In order to explore the knowledge produced and used from the Ebola Crisis, this thesis took two approaches. The first was a content analysis of 267 different lessons learned documents, from three separate samples, aimed at understand the question of *who* is producing and using *what* knowledge. The academic sample (161 documents) was collected to understand the breadth of academic knowledge being produced from the Ebola Crisis and used a Scopus literature review methodology for collection. The operational sample (62 documents) focused on particular, well-known practitioner publications for understanding what lessons those at an operational level had been learning. The policy sample (34 documents) was collected through a published list of documents that can be said to have directly informed policy and aimed at understanding the breadth of lessons that policymakers had integrated into their understanding of the Ebola Crisis. Each of these samples was explored to understand who was codifying what lessons.

This analysis showed that the main lessons from the Ebola Crisis concerned communication (either with publics or between responders), involving communities in various aspects of response, and boosting health systems in countries to better prevent and re-

spond to outbreaks. These lessons, however, differed depending on the sample: academics were much more focused on the health systems of the affected countries and the capacity to detect/ respond to an outbreak, policymakers were more focused on the governance and coordination challenges in outbreak response, and practitioners were more focused on the practical elements of response like training and personnel. What is more, the *depth* of the analysis of each lesson further revealed that while lessons surrounding communication, coordination, health systems, and community involvement were frequently cited, the level of detail for the lessons was much less than the level of detail for lessons on the WHO, surveillance, and biomedical countermeasures. These trends indicate that codification is not only a question of *who* chooses *what* focus but also *to what extent* do they focus on particular lessons.

To explore this further, a series of 36 interviews were conducted with individuals who could be said to be either report authors or report users. 23 report-users were interviewed over the course of 3 months to understand what they had learned from the Ebola Crisis, how they had used knowledge in the Ebola crisis, and what use they had for codified documents like reports. 13 report authors were interviewed - 3 for the EIAP, 11 for the HLIP (approximately 50% of each panel) - in order to understand how the two reports were constructed and to what extent the process affected the outcome. These interviews allowed us to gain an understanding of not only how reports are constructed but how they are used, gleaning insights into the motivations of report authors and report users.

Interviewing report-users found that different types of user have different levels of utility for reports: policy users find the reports useful because they inform policy and focus on the priorities that they focus on (governance and coordination); academics view them as useful analytical objects or summations of events despite their performativity because they offer insight into the priorities of policymakers; practitioners find them less useful because they do not focus on the lessons which they would prioritise. Given that many of the reports are written by academics and policymakers this would make sense, however, practitioners were members of the two case panels and still they provided lessons which were very focused on policymaker and academic priorities.

This phenomenon extends to our two case reports and beyond. In the EIAP we see a report that is heavily influenced by a need for accountability and a need to be seen to be doing something; the HLIP on the other hand attempts to present itself as 'independent' and not apportioning blame or needing to be seen as doing something. Despite this there are very high levels of overlap between the lessons of these two, and the lessons of the other

reports. In general, both of these reports focus on academic and policy priorities rather than practitioner priorities. It is therefore clear that simply looking at these reports as objects with inputs (authors, evidence, etc.) and outputs (recommendations, narratives, etc.) is insufficient in fully exploring their role in knowledge accumulation.

Interviewing report-authors, we see that this process can drastically affect the outcome. In the EIAP we see how a process that was primarily driven by the only practitioner on the panel, still led to a focus on policy and academic priorities. The panel was strictly set in terms of scope and time from the outset in the panel's Terms of Reference; not only was it to be institutionally focused (logical and expected) but member states had frequent interjections into the process and were the obvious audience for the report. We also see how the strict timetable that was quickly dismissed as impossible by the chair was still adhered to in principle when an initial report was required for presentation to member states at the WHA only 4 months after the panel had been established. Adding this to a process of evidence collection which was not as complete as the chair would have liked, and a sense that the problems had already been laid out by the media, the likelihood for any learning to have occurred during this panel process is minimal at best.

Looking at the HLIP, we see how such a different panel could have such a similar outcome. In the first instance, the panel had much more time, many more practitioners, and no need for accountability or performativity. However, as we look deeper into the process of the report itself we see how dependent the evidence-collection was on the experience of the panel members. This is particularly constraining given that only 3 members of the panel were west Africans and very large difficulties were found in remotely engaging with them. This disparity in evidence - in addition to an academic frame from the outset, entire passages being written by academic members to which the panel deferred, and an early decision to publish in the Lancet for an academic audience - created a situation whereby the lessons focus heavily privileged academic members' priorities.

What does this mean for codified knowledge accumulation from disease outbreak response? This final chapter will make the argument for the three main contributions of this thesis. First, paying theoretical attention to report *processes* and the methods by which reports are constructed is just as important as paying attention to the composition of the panel or the final results of the report. Second, we argue that a practical focus on the production of codified knowledge is necessary due to the way in which knowledge codification functions *as a learning process in itself.* Finally, this chapter will argue that a report's performativity extends beyond the report as an object but into the process

itself, meaning that a report is not only a missed opportunity for learning but an active privileging of certain knowledges over others. This chapter will then conclude with some suggestions for further research and recommendations for policy.

8.2 Codified knowledge production from outbreaks: more than who learns what

This section explores the first contribution of this thesis: theoretical exploration of report contexts, authors, and outcomes is insufficient and a process-based view is required to fully capture the utility of codification. We begin with a recap of the theoretical explanation for codified knowledge as a performative object and as a learning object. Then we reiterate how the data demonstrates how reports with varying characteristics have reached very similar conclusions. This section closes by arguing that the process is therefore an important factor in understanding the performativity and learning processes of codified knowledge production.

When we looked at the function of so-called lessons learned reports, we first had to explore current theorizations surrounding them. Birkland (2009) theorised these lessons learned reports as 'fantasy documents', demonstrating that a need to be seen to have 'done something' forms a large part of the rationale for writing a lessons learned report. Additionally, Birkland (2009) noted how this performativity (the writing of a report to 'perform' learning) is widely accepted and thus because learning is not expected, these documents are generally ignored after being published. This performativity aspect of the lessons learned report is also explored by Gephart et al. (1990).

For Gephart et al. (1990), the sensemaking aspects of a public inquiry further detail the performativity of the public inquiry and the ensuing report. Gephart et al. (1990) notes that the spectacle of the public inquiry is a performance by which allows cultures to 'make sense' of what happened during a crisis and move on. By the same token, the report of the public inquiry forms a 'sensegiving' activity which imparts a particular narrative and a particular interpretation upon the crisis, thereby providing the image of having learned from it. This exploration of the sensemaking properties of the lessons learned report is further explored by authors like Brown (2000, 2004).

As Brown (2000, 2004) notes, the lessons learned report itself forms multiple performative roles. In the first instance it is established as an authoritative account of the crisis which establishes a particular interpretation and therefore informs particular 'les-

sons'. Second, the report apportions blame, giving a sense of accountability to the report - someone has been held to account by being named in the report. Third, the report presents an omnipotent view of the future by which crisis of a similar kind can be easily responded to, thanks to the lessons from the current crisis. All three of the various performative actions re-establish the authority of the institutions producing the report, allowing for a continuation of the status quo.

Finally, Roux-Dufort (2000) extends these arguments to the generality of learning from crisis. Roux-Dufort (2000) argues for three types of normalization process which contribute to an inhibition of learning from crises: cognitive normalization applies 'standard' problem-solving techniques to the extra ordinary problem of crisis; psychological normalization attributes root causes and human error to the crisis, giving a sense that 'we can be better'; and socio-political normalization asks experts to assess the crisis and make technical recommendations to make the crisis a technical object not a social object. These processes, Roux-Dufort (2000) argues are equally performative and are attempts at re-establishing the status quo as quickly as possible.

Theoretically lessons learned reports are discussed mostly for their role as *objects*. For Birkland (2009), they are fantasy objects used to assuage fears and perform 'doing something'. For Gephart et al. (1990) and Brown (2000, 2004), they are socio-political objects designed to establish a particular narrative and re-establish particular institutions as authoritative. Finally, for Roux-Dufort (2000), they form a part of cognitive, psychological, and socio-political normalization which allow for the re-establishment of the status quo. What these object-based views of lessons learned reports miss, however, are the processes that take place during the *process* of writing a lessons learned report.

As has been shown through the document analysis and the report user interview data, different types of author focus on different lessons learned. This is not surprising, everyone has various experiences and viewpoints which will guide their interpretation of the crisis. However, what we also saw was a large convergence in the broader evidence towards certain lessons - we saw how lessons surrounding communication, community involvement, and health systems strengthening were highly converged upon, and that when depth of analysis is accounted for, surveillance, WHO authority, and biomedical countermeasures were converged upon. This trend occurs despite a total of 267 different documents with varying contexts, motivations, performative needs, authors, and audiences. Theory tells us that this should produce a vast swathe of different lessons with no real convergence, yet the opposite is true.

What we found when looking at two specific reports with very different characteristics but very similar lessons is that the *processes* by which the reports were produced heavily affected the outcomes. While the EIAP was seemingly performative from the outset, its chair and only practitioner acted against that performativity throughout and yet the processes involved of continuously reporting to member states, having such little time to fully assess the outbreak, and having no real debate over the problems, only the solutions, created a report which largely fit with the priorities of the policymakers that commissioned it. The HLIP on the other hand was largely 'indepdendent' and has no real need to be seen to be doing something or to apportion blame, however the lack of full and meaningful engagement with the panel, combined with the reliance on panel members for evidence, resulted in a text which stuck to the dominant paradigm and had limited scope for learning.

The processes here, while different in character, are similar on a deeper level. Birkland's 2009 framework, as we saw in Chapter 2, shows that a learning process in policy engenders group mobilisation, agenda setting, and discussion of ideas. On the surface, these reports had processes which did mobilise groups, set agendas, and discussed ideas. However, the ways in which the reports were participatory, evidenced, and disseminated weakens the impact of these factors: limited participation weakened group mobilisation, limited evidencing weakened the discussions, and limited dissemination weakened agenda-setting. These reports, in essence, performed the outcomes that Birkland 2009 notes are conducive to learning but did not invest in the underlying processes that underpin these outcomes.

The process of writing a report, then, is equally important at the context, authors, and audience. A huge number of pieces of writing were produced following the 2013-2016 west African Ebola Crisis, yet a number of clear lessons emerged as dominant, all fitting with the dominant Global Health Security paradigm. Looking at the processes of two different reports we can see how different contexts produce the same result by limiting the space for the processes of learning and engagement. This demonstrates that an object-based view of lessons learned reports is theoretically insufficient and that a process-based view is required to fully examine the learning role of lessons learned reports.

8.3 The 'lessons learned' report's role in knowledge accumulation

This section explores the second contribution of this thesis: practical attention should be paid to the codification process because the processes of codified knowledge production

and use are important factors in the accumulation of knowledge from disease outbreak responses. We begin with a recap of the theoretical description of reports as positive vehicles for knowledge transfer and knowledge accumulation through both the object (the report) and the process of knowledge codification (the report process). We then move on to the data, showing that the *processes* of a report can heavily *decrease* the space for learning, and is not just positive space for knowledge codification. The section then closes by arguing for a more practical focus on report construction processes with attention being paid to giving space, time, and resources for learning as well as facilitating more meaningful panel engagement.

In exploring knowledge accumulation from disease outbreaks we began by exploring the concept that knowledge accumulation operates in a continuous cycle. This cycle, according to many theorists - like Kolb (1984), Argyris and Schön (1996), and Argote and Miron-spektor (2011) - occurs via the repeated sequence of two actions: deriving and abstracting knowledge from task experience, and applying that new knolwedge to new experiences. This cycle continuously creates new knowledge from repeated tasks and knowledge accumulates as task experience accumulates.

This cycle can be conceptualized at multiple levels and has led to the creation of two separate fields: organizational learning and knowledge management. In each of these fields, new knowledge is produced through individual-level cognitive processes and group-level social processes (Crossan et al., 1999). In order to continuously produce and accumulate knowledge (particularly tacit knowledge) the members of the group or organization must remain reasonably stable over time (Argote and Miron-spektor, 2011; Easterby-Smith et al., 2000). Even organizations with discrete project boundaries can transfer tacit knowledge because of their reasonably stable personnel (Scarbrough et al., 2004; Boh, 2007).

Large scale crises, however, are different because of their exceptionalism. In the first instance, extra ordinary disease outbreaks do not occur every day, often large spans of time occur between different outbreak experiences (Kouzmin et al., 1995; Corbacioglu and Kapucu, 2006). This can pose a barrier to knowledge accumulation because people may not remember the last experience or may even not have been involved in the last experience, limiting knowledge transfer. Second, these events are highly heterogeneous - different contexts, different pathogens, different times, different countries, different capabilities, etc. all contribute to highly variable disease outbreak responses (Elliott, 2009; Deverell, 2009). This variability means that lessons from one outbreak response may not necessarily be applicable in the next. Third, outbreaks are complex events that require multifaceted,

sometimes multinational responses and often causes and effects are difficult or impossible to disentangle (Comfort, 1996; Comfort and Louise, 2004; Comfort, 2005; Comfort and Kapucu, 2006). This ambiguity in cause and effect can also decrease opportunities for knowledge accumulation because causes and effects identified in one outbreak may be irrelevant in the next or not discoverable in the next.

Theory offered a solution in the form of knowledge codification, however, and provided a mechanism by which these barriers to knowledge accumulation could be overcome. Zollo and Winter (2002) and Echajari and Thomas (2015) both argued that codified knowledge (knowledge written down in reports, paper, diagrams, etc.) could be a useful form of knowledge for overcoming these barriers because it articulates knowledge for use across space, time and persons. Additionally, codified knowledge includes details about *why* certain recommendations were made, allowing future learning to build upon it. Furthermore, the authors argue, the very processes of codification are useful because they are also learning processes by which knowledge is created through articulating the tacit. Therefore, reports and papers were a clear solution to the problems presented for knowledge accumulation from disease outbreak response.

Further to this, Birkland (2009) noted a cyclical process of learning from disaster events. Figure 8.1 shows this cycle as an ideal-type learning process.

This model is a useful frame for us to begin examining the ways in which lessons learned reports contribute to knowledge accumulation because it provides us with criteria by which we can assess report processes.

The first set of data that allow us to discuss the role of lessons learned reports in these processes is the document analysis of lessons learned reports themselves. This analysis demonstrated the knowledge *produced* from the ebola crisis, a first part of the knowledge accumulation cycle. As we saw in chapter 5, this production of knowledge highlighted communication, community involvement, and health systems strengthening as central lessons from the ebola crisis. This partly demonstrated the paradigm-challenging nature of the outbreak by showing prominent lessons

We did, however, see that these paradigm-challenging lessons were often referred to either in a frame consistent with GHSp or in a superficial manner with no real analysis. We saw that lessons around health systems strengthening, for example, were often re-framed to refer not to broad health sector reforms but narrow contributions to a global 'need' to prevent, detect, and respond to health threats. Furthermore, we saw that actors not traditionally considered by the GHSp found these lessons particular difficult because they

Figure 8.1: An ideal model of event-related policy change
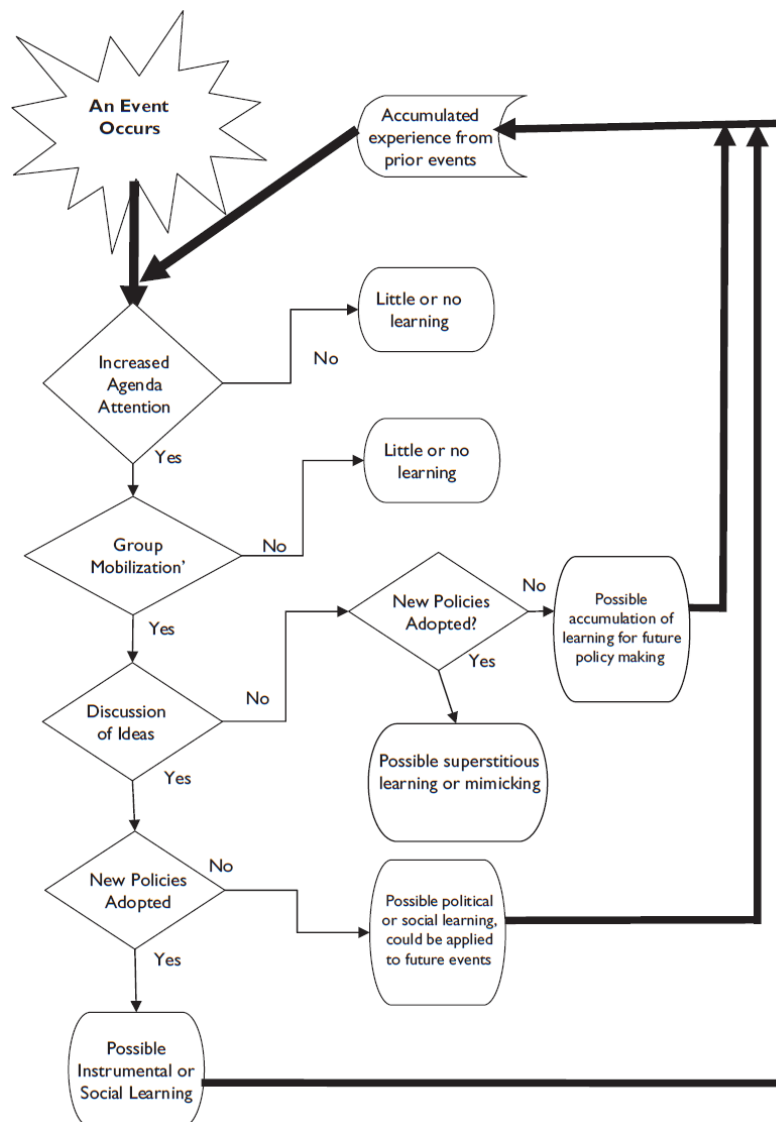

Source: (Birkland, 2009, p.151)

were stating the obvious and not applicable to the context.

Returning to our conceptualization at the end of chapter 2, we can see with Figure 5.2 how these blockades can lead to a selection pressure towards a particular knowledge.

Taking the evolutionary perspective of knowledge (a co-opting of Nelson and Winter (1982) and their evolutionary perspective of economic change) we can characterise the *production* of knowledge as tending towards a paradigm due to two selection pressures: superficial exploration of extra-paradigmatic lessons, and co-opting new knowledges into the framing of the existing paradigm.

When we look at the data from the report users, we get another picture of this evolutionary process but from the *use* side. In particular, we understand that the use of a

Figure 8.2: Mapping the knowledge accumulation cycle over time in discontinuous outbreaks.
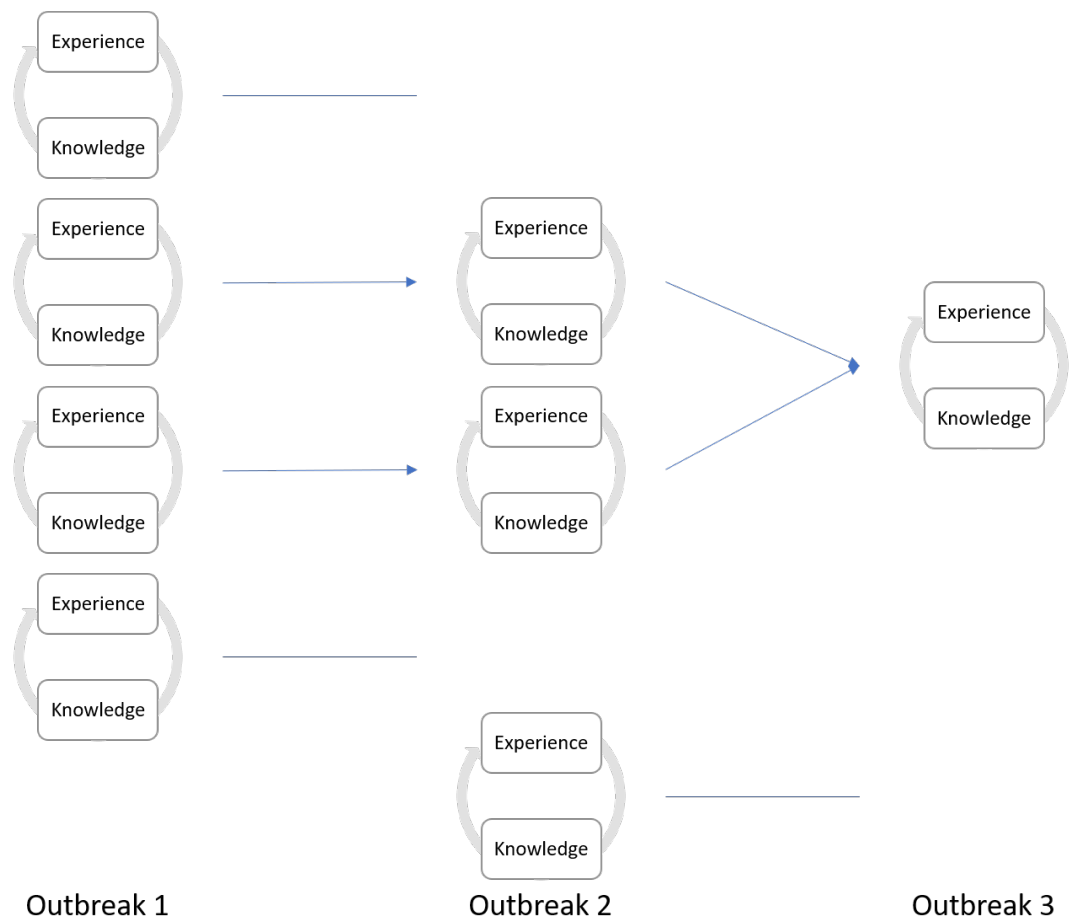
Source: Author's elaboration and expansion on Kolb (1984)

report's lessons is dependent upon the context of the user. First, we found that operational personnel were less likely to find reports useful *because* of their superficiality - operational responders either didn't *trust* the lessons provided or didn't find them useful.

In addition to these production-related issues, use was also limited by the knowledge processes employed by operational responders. A high reliance upon transactive knowledge (Brauner and Becker, 2006) and professional/ personal networks as knowledge sources made reports a less useful vehicle. In particular it is those knowledges which are *available and accessible* which get used - users need to be able to find and understand lessons as well as access the people who produced it.

Looking again to our *evolutionary* perspective of knowledge accumulation, we can see how use also creates selection pressures that tend towards dominant paradigms. If only those knowledges which are available and accessible are used (thus completing the accumulation cycle) then the more prominent lessons are the lessons which 'survive' to the next outbreak, and other lessons are re-invented as before.

Codified knowledge production and use create dual selection pressures on the accumulation of knowledge. Production is constrained by superficial explorations of extra-paradigmatic lessons and the co-opting of non-paradigm lessons to support the paradigm's aims. Use is constrained by the simple availability and applicability of lesson - if users cannot find or use the lessons outside the paradigm, these lessons are lost. We therefore argue that attention must be paid to the processes of report construction because they represent an evolutionary form of knowledge accumulation that has thus far been under studied.

8.4 Report construction processes: more than a missed opportunity

What, then, do the report processes themselves tell us about knowledge accumulation from disease outbreak response? This section explores the third contribution of this thesis: reports that have constrained processes, like those in our two cases, are more than just a missed opportunity but they are an active closing down of knowledge pathways which harms future knowledge accumulation from outbreak response. The section begins with a recap of the theoretical assumption that a report is performative and therefore offers no learning, or 'fantasy learning'. Then we recap the notion of knowledge accumulation through codification of knowledge. We then demonstrate the evidence that report

processes show not a lack of learning but learning along a particular pathway. The section closes by arguing that report production processes which limit the space for learning are not limiting learning but actively shifting priorities and knowledges down particular pathways which privilege certain knowledges and communities over others.

In a previous section of this chapter we recapped the performativity of lessons learned reports. We saw how Birkland (2009) had conceptualized them as fantasy documents which presented not a 'real' account of events but a narrative of events which supported the re-establishing of an institution's authority. This, (Birkland, 2009) argued, was a main reason why these reports played no role in learning from disasters and crises.

We also saw from Gephart et al. (1990) and Brown (2000, 2004) how reports contribute to societal-level sensemaking. We saw from Gephart et al. (1990) that the very spectacle of a public inquiry creates the impression that something is 'being done' and that learning is taking place. We saw from Brown (2000, 2004) how the very construction of the reports themselves is designed to re-establish institutions as authoritative, apportion blame to other institutions, and to provide a vision of omnipotence for future crises of the same type. In effect these types of reports are performative, they 'perform' learning rather than actually learning.

What we found in exploring the embedding case of the 2013-2016 is that this view is not accurate when one considers *processes* of codified knowledge production and use. Observing an evolutionary process of knowledge accumulation we found that the processes of report production and use are highly important to learning from disaster scenarios.

In addition to this, through interviews with report authors and users we developed and examined three characteristics which contribute to the role that codified knowledge plays in knowledge accumulation:

Participatory. We found that participation in reports is a factor which can open up or close down the process of knowledge accumulation. Users of reports were often positive about their own participation in the report construction processes, citing an opportunity to reflect upon their own experiences and using the process to advocate for certain perspectives. Other users, however, were less positive about the participatory approaches of these reports, they found that they were invited in a tokenistic way and were not fully engaged by other members.

As we saw in the Ebola Interim Assessment Panel and the Haravrd-LSHTM Independent Panel, participation is not a binary, it is a spectrum. In the EIAP, we saw how participation was constrained by the time and scope of the process and the inability to

fully engage during country visits. In the HLIP we saw how having various constituencies on the panel is insufficient and that *in person engagement* is necessary to fully participate in knowledge production.

Participation, then, is a useful characteristic for a report process to embody because it provides a breadth of perspective and a reflexive method to understanding 'what happened.' However, participation needs time and resources to fully engage with panel processes and contribute an opening up of knowledge spaces rather than closing them down into the dominant paradigm.

Evidenced. A core tenet of any investigation, a strong evidence base allows users to trust the outcomes of the report. This is also linked with participation - if users see that people 'like them' are providing evidence then a report is more likely to be used and its knowledge is more likely to 'survive' to the next outbreak. Additionally, for those using reports an advocacy tool, a strong evidence base gives weight and credence to the claims being made, particularly if multiple reports make the same claims.

Looking at our two examples we can see how processes don't just need to gather evidence but it needs to be used. The EIAP had high access to a vast array of evidence, including high-level interviewees and on-the-ground, in-country interviewees. Despite this, however, the EIAP makes very little of its wealth of evidence, relegating its evidentiary base to an annex and using evidence only when discussing lessons outside of the GHSp. The HLIP suffers from the opposite problem; a high use of little evidence. The report of the HLIP cites a number of news articles and academic papers but has little to no input or evidence from operational responders or practitioners.

Each of these opposing issues with evidence show us the various ways that a paradigm can shape outcomes of knowledge accumulation. For EIAP, the lack of time and space to use evidence outside of the GHSp limited the scope for making extra-paradigmatic claims. On the other hand, the HLIP's dearth of evidence outside the GHSp limited its capacity to make claims outside the paradigm.

Disseminated. Accessibility and applicability were two key aspects of reports that users identified. These two characteristics come down to the question of dissemination: how was a report made accessible and argued for its applicability. In this way, reports and panels have to argue for their own existence and for the utility of their knowledge.

Viewing our two examples, we again see two very different sides of dissemination. First, for an independent academic effort, the HLIP had remarkable reach including a briefing of the WHO Executive Board and engagement with high-level actors at their press events.

This was partly down to the weight of influence held by many of the panel members including well respected academics and advocates like Prof. Peter Piot. The EIAP on the other hand, suffered from a poor engagement process partly because its intended audience (the 2015 WHA) was engaged during the *draft* phase.

This dissemination meant that the report of the EIAP had to quickly cater to the needs of its primary audience and stay under the GHSp because it had no time nor scope to expand outwards. The dissemination of the HLIP, on the other hand, allowed it to have influence on policy (Abdulla et al., 2015) and bring its conclusions to a higher level that normally expected of a single academic publication.

Returning, finally, to Birkland (2009) and the event-based learning cycle he proposes in Figure 5.1 (page 193), we can see where each of these characteristics contributes to learning and, over time, to knowledge accumulation:

- Making the process participatory increases agenda attention and mobilises groups because people of various communities and constituencies are made aware of the process as it is ongoing and are therefore more likely to engage. Participation also opens up the discussion of new ideas so as not to constrain thought into a single paradigm.

- Having a strong evidence base allows for group mobilization because an advocate has a robust platform from which to argue for mobilization. Evidence also allows for substantive discussions of ideas and claims.

- Dissemination ensures that groups are aware of the report and panel and allows for further discussion of ideas outside of the panel's limited forum.

As we have seen the EIAP and HLIP, each of these characteristics also has the potential to limit the accumulation of knowledge as well as facilitate it:

- Limited participation constrains discussion and mobilization into narrow constituencies and paradigmatic lessons

- Thin or unused evidence bases limit the capacity to evidence extra-paradigmatic lessons and thus constrain knowledge production to a single set of assumptions

- Poor dissemination limits the use of lessons, disproportionately affecting those lessons which are novel and thus limiting their scope for implementation in future outbreaks

It is through these processes of participation, evidencing, and dissemination that codified knowledge facilitates or constrains the accumulation of knowledge from disease outbreak responses.

8.5 What are the alternatives?

Throughout this thesis, it has been argued that the GHS paradigm shapes knowledge accumulation to produce a very particular set of lessons in line with the paradigm's assumptions. This argument inherently assumes that there are other pathways that knowledge accumulation could have followed if the GHSp had less influence over the way in which we learn from disease outbreaks. This section presents two examples of the various pathways knowledge accumulation could alternatively have taken: Universal Health Coverage and One Health & Planetary Health. This list is not exhaustive and purely an overview of the approaches, but illustrates that alternative pathways exist, and could have been followed were it not for the influence of the paradigm shaping knowledge accumulation.

Universal Health Coverage

The first perspective here is on which has been gaining traction in recent years, seemingly spurred by a shift in leadership at WHO (Ghebreyesus, 2017). Universal Health Coverage (UHC) is an objective of global health defined as:

> "ensuring individuals have access, without discrimination to comprehensive, appropriate and timely, quality health services determined at the national level according to needs, as well as access to safe and affordable medicines, while ensuring that the use of these services do not expose users to financial difficulties" (Wenham et al., 2019, p.2)

In effect, UHC is the operationalisation of WHO's foundational principle that "the highest attainable standard of health is one of the fundamental rights of every human being" (World Health Organization, 2014a, p.1) through an economic logic that access to this right must not cause financial difficulties.

The focus of UHC tends to be on equity of health access across countries (Tichenor and Sridhar, 2017; Wenham et al., 2019; Kutzin, 2013; Tangcharoensathien et al., 2015), particularly through financial means (Tichenor and Sridhar, 2017), development (Kutzin, 2013), and the Sustainable Development Goals (Tangcharoensathien et al., 2015). This focus in financial aspects of equity in health access tends to bring in institutions like the

World Bank and the Bill and Melinda Gates Foundation, rather than placing WHO at the core of its framework.

From the persepctive of lessons from the Ebola crisis, some documents were found to have lessons for Universal Health Coverage. These included an Oxfam report (Oxfam, 2015) and a European Parliament resolution (European Parliament, 2015). In these contexts, UHC was discussed as "re-prioritizing investment in healthcare ... protecting people's health and preventing the spread of diseases" (Oxfam, 2015, p.2).

UHC has also been proposed as complementary to Global Health Security by a number of authors (Wenham et al., 2019; Ooms et al., 2017; Kutzin and Sparkes, 2016; Jain and Alam, 2017). In these instances, authors draw on Health Systems Strengthening as a means to ensure Global Health Security *through* Universal Health Coverage. While UHC does offer an alternative pathway for knowledge accumulation, then, it is also possible that UHC offers a complement to the GHSp.

One Health and Planetary Health

One final pair of examples of an alternative perspective to GHS are the notions of One Health and Planetary Health which both attempt to expand Global Health beyond the realm of human health. One Health expands the conception of Global to the health of animals, stressing "the need to work across disciplinary divides through a cross-sectoral, collaborative and integrated approach to zoonotic diseases, as well as other health problems that cut across the human-animal-ecosystem interface" (Bardosh, 2016, p.4). One Health takes into account animal and ecosystem health because of non-human reservoirs that could impact the prevalence of human health threats.

Planetary Health is another attempt to expand beyond the human, this time taking a holistic approach which not only incorporates other living organisms but the planet itself. *The Lancet's* Commission on planetary health discussed it as such:

> "Health effects from changes to the environment including climatic change, ocean acidification, land degradation, water scarcity, overexploitation of fisheries, and biodiversity loss pose serious challenges to the global health gains of the past several decades and are likely to become increasingly dominant during the second half of this century and beyond" (Whitmee et al., 2015, p.1)

Planetary Health, then, is an integrated conceptualization which combines climate change concerns, ecological perspectives, and health concerns together in a holistic manner.

Both of these perspectives expand the definition of global health beyond the human and incorporate, to various extents, animal, ecological, and climate health. In the case of disease outbreaks, these expand the lens to look at the animal, ecosystem, and climate drivers

These perspectives on health at a global level are illustrative examples of some of the pathways that knowledge accumulation could have taken. This thesis makes no argument that any of these perspectives are normatively better or worse than Global Health Security, nor are they necessarily mutually exclusive. What this thesis does show, however, is that the paradigm of Global Health Security filters lessons in such a way as to re-entrench its own dominance and better competes for limited attention and resources.

8.6   Conclusions

This thesis have made three main contributions: theoretical exploration of report contexts, authors, and outcomes is insufficient and a process-based view is required to fully capture the utility of codification; practical attention should be paid to the codification process because the process itself is an opportunity for learning; and reports that have constrained processes, like those in our two cases, are more than just a missed opportunity but they are an active closing down of knowledge pathways which harms future knowledge accumulation from outbreak response. This section summarises these three key arguments then moves on to discuss the limitations, and finally makes suggestions for future research and recommendations for policy.

Contributions

The first contribution of this thesis has been that an object-based view of lessons learned reports is insufficient for their analysis. While many theorists have argued their performativity and how a need to be seen to be 'doing something' and apportion blame causes lessons learned reports to be weak aspects of disaster learning, these have tended to focus on the reports as objects and do not acknowledge that varying contexts, authors, and audiences produce similar reports. In demonstrating this empirically through document analysis, we find that a *process* view of lessons learned reports is required to fully theorize their role in disaster learning.

The second contribution concerns whether the process of report construction is indeed a learning process. In conceptualising learning we came across some of the key problems with learning from disease outbreaks: event rarity, heterogeneity and complexity interrupting

the learning cycle. We also found that knowledge codification as a process should allow for a reduction of the complexity of the event, as well as the ability to pass this knowledge on from one scenario to the next. However, the document data demonstrated how the reports seem to be privileging analysis of lessons within an already dominant paradigm. Additionally the process data showed that limited space, time, scope, and engagement created two panels which - despite being very different in terms of context, authors, and audience - were very similar in terms of lessons.

Finally, this thesis contributes to this process-based view of the lessons learned report by arguing that a report is more than a missed opportunity for learning but a narrowing of the scope of learning to only certain privileged knowledges. We argue that on the one hand, theory says that these reports should be incredibly useful for transferring and producing knowledge, yet on the other disaster learning theory argues that they are performative, socio-political objects. We demonstrated that a process-based view of these reports finds that they are *both* - they operate to facilitate learning whilst also performing their socio-political and performative function. This, we argue, is worrying in our case because the performative and socio-political operates to guide and constrain the learning processes, leading to privileged knowledge and the shutting out of certain lessons. In essence, the socio-political function isn't inhibiting knowledge accumulation, it is directing it towards easy, technology-focused solutions unconducive to long-term sustainable outbreak responses.

Limitations

Like any study, this thesis has its limits and boundaries to what it can and cannot claim to know. This section briefly discusses three limitations: this thesis first ignores the role that tacit knowledge processes play in learning from outbreaks, an important aspect of knowledge dynamics particularly for practitioners; the very nature of researching exceptional events mean that this research falls victim to event heterogeneity, learning or knowledge codification could be very different in other disaster, crisis, or even outbreak contexts; and finally the limits of coverage, both in terms of documents and interviews, mean that there may be some aspects of this phenomenon left unexplored, they will remain for now unknown unknowns.

First, the tacit knowledge dimension to learning is an important facet to note because it plays such an important role in practitioner learning during outbreaks and other disasters. While the focus of this thesis is on codification and codified knowledge, without tacit

knowledge all of these processes would be rendered impossible. Tacit knowledge is needed to be able to interpret these documents and this is gleaned from education and field experience - not from reading more reports.

Additionally, there are many processes by which practitioners transfer tacit knowledge without needing to write reports or codify knowledge. In these cases, knowledge is transferred through training programs, conferences, workshops, pedagogy, debriefs, and myriad other informal and formal interpersonal processes. These are all important aspects of learning and knowledge accumulation in disease outbreak response, but given our focus on the role of codification and lessons learned documents, were outside the scope of the present study.

Second, context differences could drastically affect the outcomes here. As we discussed during the thesis, these events are extra ordinary - they do not happen all the time, they come as a surprise, and they are not 'normal' events. As such, learning from them is also not 'normal' and should not be treated as such. While this allows for some generalisability to other extra ordinary circumstances, it is safe to say that these emergency-mode processes may not be applicable in 'normal' times and such explanations are, again, outside of our scope here.

Third, and finally, there are limits to the coverage of the data presented here. In the first instance, this is an embedded case study meaning that one event is studied and two reports are examined in detail. What is more, even within this it cannot be guaranteed that full coverage of *all* documents presenting lessons from the Ebola Crisis were covered, and it is certain that *all* report authors and report users were interviewed. As such, we cannot account for the unknown unknowns that still remain.

Suggestions for Future Research

This thesis has made three main contributions: looking at the processes of knowledge codification, the pressurised nature of the learning process, and the diversion of the knowledge accumulation down specific pathways. This thesis, as noted above, has some gaps and thus we make some suggestions for future research in order to complement the work presented here.

On avenues for future research, we focus on three main areas. The first, is the notion of 'normal' outbreak learning. Disease outbreaks on a small scale occur quite frequently and can be considered 'normal' for some actors (like the WHO, MSF, the Red Cross, etc.). In learning from these smaller scale, less exceptional events, how does learning differ? This

would be an interesting avenue to complement the larger, more extra ordinary research cases presented here.

Second, work on Simulation Exercises could be a useful avenue to explore. Exercises like Dark Winter, TOPOFF, and others, play a role in attenuating policymakers to particular issues within responses. However, these are subject to the biases and processes of those who design the materials, timelines, and activities of the simulation itself. What variables are taken into account? Who decides what the main aspects presented to the players will be? These could be an interesting focus to understand what learning looks like an an 'artificial' outbreak where the stakes are lower but the outcome is controlled.

Third, more in-depth fieldwork on the tacit elements of knowledge accumulation for responses would be highly complementary to this thesis' work. As described earlier, a limitation of the thesis' work is that it ignores the dynamics of tacit knowledge in outbreak response. This means that the thesis misses a number of important elements of the tacit understandings developed by operational response personnel in responding to individual outbreaks. In particular exploring the search strategies and problem-solving techniques of responders would offer tremendous insights into the tacit knowledge dynamics of disease outbreak response.

Recommendations for Policy

This thesis began with a real-world problem: why do lessons learned documents from outbreak responses always have similar lessons? This thesis therefore concludes by attempting to 'fix' this real-world problem. Having argued that the *processes* of report construction are extremely important, and having argued that these processes constrain learning to particular pathways - hence leading to path-dependent knowledge accumulation from disease outbreak response - we make here some recommendations for how to ensure these processes allow for learning and knowledge accumulation.

The first recommendations concerns time and scope of panels. As we saw in the EIAP, severely constrained time can heavily decrease opportunities for learning. The timing of the EIAP was an 'impossible' one and yet the panel was held to it anyway which forced the panel to rely on already established narratives and understandings to make sense of the crisis at hand. We acknowledge that providing large expanses of time may not always be appropriate, but providing good time in which the panel can then set their own timetable will allow members the time to fully make sense of the crisis.

Furthermore, constraining the scope a panel's investigation from the outset with highly

stringent terms of reference (as we saw in the EIAP) or with an already pre-determined outlet or set of research questions (like the was in the HLIP) can also limit the capacity for learning. This pre-determined scope causes panel members to, again, readily adopt the already dominant understanding of the crisis and not form their own opinions. In this case, allowing a panel to fully assess the entire event and pick out the elements that *they* deem important, not that the scope deems important, is a worthwhile endeavour that will allow the panel to fully make sense of the crisis.

Second, we turn to panel member engagement. As we saw in the EIAP (where the entire report was seeming driven largely by the chair) and in the HLIP (where some members of the panel were unable to meaningfully contribute) the extent to which panel members engage with the panel process is an important factor for the outcomes of report. We recommend, first and foremost, that panel engagement is equitable (all members are afforded equal opportunity to speak, give evidence, and author the report) and that all members are resourced to be physically in the room (or if teleconferencing must be done, everyone must teleconference). This will ensure that all of those in the room are equally engaged and invested in the report's process and outcomes.

Finally, dissemination and engagement of users in the process must be done from the outset. Report users frequently cited a lack of appreciation for reports because they didn't have time to read them, nor did they think the recommendations pertained to them. Having various report users represented on a meaningfully engaged panel ensures that they are committed to the report and its outcomes. Furthermore, decisions about audience and the various ways in which the report outcomes can be used and disseminated should be considered at the outset. As one interviewee put it, the report is "the beginning of the process" - learning cannot be said to take place until it is put into action and therefore dissemination and engagement with users is paramount to gaining that all important action.

This thesis had argued for a more process-based analysis of lessons learned reports. It has found that the processes by which these lessons learned reports are produced create a situation where knowledge accumulation is not inhibited but directed down particular pathways, privileging particular voices and knowledges. In recommending that panels are given sufficient time & scope to fully make sense of the crisis, that all members of the panel are meaningfully engaged, and that report users are considered & engaged from the outset we hope that these reports can increase the learning opportunities offered and create better, more resilient responses to future crises.

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Appendix A

Interview Protocols

A.1 Report-Authors

- What were the objectives of the report?
    - What were your objectives going into it?
- How clear were you at the outset of the purpose of the panel/report?
    - Did your understanding of the purpose change? How? Why?
- Were you clear on the intended outcome of the process?
    - What about the intended uses of the outputs?
- How were you recruited for the panel?
- How did you establish the recommendations?
    - How did you identify successes?
        - How did you identify why these succeeded?
    - How did you identify failures?
        - How did you identify why they failed?
        - How did you identify how to fix these failures?
    - How were these transformed into concrete recommendations?
- When thinking about the report, what elements of your own personal experience did you bring?
    - How did your ideas of these change over the course of the deliberations/discussions/debates?
- In what ways were you involved in the dissemination of the outputs?
    - Have you been approached since the process to speak to NGOs? Academic Conferences? Workshops? Engagement Activities?
- What do you think is the role of large international expert assessments like the EIAP or HLIA?
- What do you think were the main lessons from the Ebola outbreak?

A.2   Report-Users

- What role did you take in response to the Ebola outbreak?
- How do you, personally, learn from your experiences?
- As a responder, what types of knowledge do you use?
- If a problem arises in response, where do you looks for solution?
    - Personal networks?
    - Academia?
    - Professional bodies of knowledge?
    - Organizational repositories?
- Who produces these types of knowledge?
- What do you think were the main lessons from the Ebola outbreak?
- Thinking of Ebola, how did your organization respond?
- What lessons has it internalised from its experiences?
- How were these lessons internalised?
    - What processes? Debriefs? Post-project reviews? What was codified? How?
- What do you think is the role of large international expert assessments like the EIAP

  or HLIA?
    - Do you use them personally?
    - What has your organization done with the outputs from such international

  assessments?