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Governing Through Risk: The Politics of Anticipation in the British Fire and Rescue Service

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Abstract

This thesis examines practices of fire risk governance in the contemporary British Fire and Rescue Service (FRS). I trace the organisational and operational transformations the Fire and Rescue Service has undergone since the early twenty-first century. I argue that these transformations are structured around a new conceptualisation of fire as an event to be governed. Rather than understood and acted upon merely by its occurrence in the here and now, fire is known and governed in the contemporary as a risk of the future. Through a case study of one of its regional headquarters, I explore the digital infrastructure of the FRS. This digital infrastructure encompasses the data, analytic technologies and organisational processes by which fire is rendered as a risk. In turn, the thesis inquires into how the risk projections made by the digital infrastructure facilitate and condition what I call anticipatory modes of governance to manage fire. Forming the strategic architecture of the contemporary FRS, these modes of governance are deployed in the present but are directed at, and justified through, visions of fire risk in the future.

Through my case study, I describe overall the contemporary problematisation of fire risk governance. I call this problematisation governing through risk. I use the term governing through risk to express how risk identification has become the conditions of possibility for the Fire and Rescue Service in the present day. I show how risk identification works to organisationally shape the FRS and justify the existence of the service as a contemporary security apparatus. Furthermore, I argue that risk identification is used to mould and legitimate the forms of strategy used to govern fire risk and secure populations from fire.

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List of Abbreviations

AFS- Auxiliary Fire Service

ARP-Air Raid Precautions

CCTV- Closed Circuit Television

CFRMIS- Community Fire Safety Management Information System

CLG- Communities and Local Government

COMAH-Control of Major Accidents and Hazards

CPP-Corporate Planning and Performance

EFEE-Edinburgh Fire Engine Establishment

FRS-Fire and Rescue Service

FSEC-Fire Service Emergency Cover

GIS-Geographical Imaging System

HFSC-Home Fire Safety Check

ICC-Incident Command Centre

IRMP- Integrated Risk Management Plan

IRS-Incident Recording System

ITN- Integrated Travel Network

LFB-London Fire Brigade

LFEE-London Fire Engine Establishment

MIS- Management Information System

OSHENS- Optima Safety Health Environment Network Solution

PB Views-Performance Based Views

RIEP-Regional Improvement and Efficiency Partnerships

SLT-Service Leadership Team

SMT-Service Management Team

SOPs- Standard Operating Procedures

SQL-Structure Query Language

SSRI- Site Specific Risk Information

Statement of Copyright

Acknowledgements

Chapter 1: Introduction

At the turn of the twenty first century, the British government's criticism of fire governance was rife. The Fire and Rescue Service (FRS) was criticised in terms of its entire organisational structure and operation. The 'statutory basis of the fire and rescue service' (2003, 14) the 2003 white paper *Our Fire and Rescue Service* claimed, 'is outdated, having been framed soon after the Second World War' (ibid).

The FRS, and the interventions it makes in daily life, were deemed outmoded by the British government because of a failure to understand fire specifically as a risk. Institutional changes were to be carried out under the conviction that strategic decision making 'should vary in accordance with those different levels of risk' (ibid) found across different regions in Britain which; 'At the moment (in 2003), they do not' (ibid, my brackets).The FRS should conduct and deploy itself 'by making an informed assessment of the risks in the area and the best ways to manage them' (2003, 26).

In this thesis, I understand risk as a technology by which to name and present the future and the events which might unfold in the future. Risk is thus a construction, a means by which to make sense of the world and the world's future through different forms of knowledge. By making sense of the future, risk, as Amoore and de Goede claim, is also 'performative- it produces the effects that it names' (2008, 9). In relation to the governance of risk, this performative aspect of risk is evident in the forms of action that risk can enable and legitimate. By making sense of the future, risk is thus used to manage, shape and govern the future through action in the present[1]. Articulated as a risk, fire has become an event which can be known, calculated and assessed by its potential to occur in the future. By making sense of fire through risk, the FRS's operation in the present seeks to plan and prepare for, protect from and prevent fire in the future.

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[1] My base definition of risk stresses that risk is used to make sense of the future. Following Amoore and de Goede's introductory remarks to *Risk and The War on Terror* (2008), risk in turn operates to make the future governable in the present. For the authors, risk is 'a means of making an uncertain and unknowable future amenable to intervention and management' (2008, 9).

The legislative response to the white paper's criticisms was *The Fire and Rescue Services Act* (2004)[2].

This Act sought to instigate those statutory changes seemingly required to re-invent the now rebranded

Fire and Rescue Service in lieu of a supposedly new risk climate and context in the twenty-first century[3].

The Act formally established extended roles for the service, such as response to terrorist incidents and

natural disasters[4]. A process was underway which saw the service 'developing a wider role' (2004, 5)

which then Deputy Prime Minister John Prescott saw as 'tackling new threats which we are now facing,

including terrorism, and threats such as flooding and other environmental factors' (ibid). With its

rearticulation as a risk, fire is posited amongst a wider set of contingencies that the service is concerned

with. Similar to this wider set of contingencies, fire is governed by its capacity to occur in the future.

Research and literature has developed around the new and emergent risk climate supposedly ushered in

by the environmental and terrorist incidents which are referred to by Prescott (See, for instance,

Amoore and de Goede, 2008, Ericson and Haggerty, 2006, O'Malley, 2006). This literature is contributed

to and critically engaged with in this thesis. The literature is important initially in terms of its focus on

how the emergence of such a risk climate has instigated important transformations to how governance

is legitimised, justified and rationalised in the contemporary.

In addition, I attribute importance to this literature because it explores how the emergence of new

governing rationalities around risk instigates the development of new techniques and practices of

intervention to secure society from risk. For instance, in their continuing work on the deployment of

exercises which imagine potential emergencies, Adey and Anderson (2012) demonstrate how

emergency response is now a task comprehended, and enacted, through the consolidation of new forms

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[2] The *Fire and Rescue Services* Act rebranded fire brigades as the Fire and Rescue Service (FRS).
[3] The only event Prescott refers to explicitly is 9/11. As page 2 of this thesis shows, however, Prescott does refer generically to 'terrorism, and threats such as flooding and other environmental factors' (2004, 5). 9/11 is thus only one of a catalogue of potential events that served to justify the changes the *Fire and Rescue Services Act* established.
[4] These roles revolving around rescue operations were always informally part of the service's role (See *Fire and Rescue Services* Act, 2004).

of anticipatory action and knowledge such as precaution, pre-emption and preparation[5]. Alternatively, with similarity to research undertaken by Ericson and Doyle (2004) and more recently by Lobo-Guerrero (2011), Aradau and Van Munster (2008) argue that the underwriting practices of insurance companies post 9/11 not only reflect a redistribution in where governance happens but also act to ensure and assure the continuance of subjectivity formed in line with capitalism and against future disruptive catastrophes. Elsewhere, de Goede (2012) has examined the deployment of financial tracking mechanisms in the continuing war on terror to advance the notion of speculative security, in which intervention becomes inextricably bound and interwoven with economic forces in preventing the purportedly inevitable next terrorist attack.

The questions pursued in the literature grouped together here are varied and abundant. However, they share at least one over-arching claim; that security governance is attendant to, organised around and justified through projections of futures. These futures are understood by their potential for disruption, catastrophe or disaster. In this thesis, the permeation in this literature of what may be referred to as anticipatory governance is drawn upon to conceptualise the new organisational footing and operational practice of the FRS.

Another similarity across the existing literature engaged with in this thesis is its overall focus on a particular type of event to which new regimes of governance are attendant. Heretofore, research has focused on how new security practices have emanated in accordance with possible events which, although low in probability or frequency, possess the potential for high consequence for life and deeply embedded normative structures of society. It is, after all, with the occurrence of such large scale contingencies that new ways of imagining the future gain plausibility and pave the way for new forms of

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[5] For a more rigorous treatment of these specific anticipatory techniques, see Anderson (2010).

intervention to be brought into effect (See de Geode, 2008, Aradau and Van Munster, 2011, Salter, 2008).

In developing Adey and Anderson's work on emergency response cited above, then, I could have proceeded to examine the significance of emergency response in preparing for large scale disruption. To take such an approach, I would have to treat the FRS by its collaborative mandate with other blue light response organisations such as the Police and the Ambulance services[6]. In doing so, this thesis would inquire less into the *Fire and Rescue Services Act* and more into the policy which sets out this collaborative mandate such as the *Civil Contingencies Act* (2004)[7]. Such an approach would also mean ignoring how the introduction of new forms of anticipatory governance have affected the FRS most prominently in its day to day existence in attending to an event which the FRS has addressed since its inception: fire.

I concentrate on how modes of anticipatory governance have renegotiated how the FRS' secures fire risk specifically. In terms of its frequency as an occurring event, fire is more quotidian, mundane and everyday than a terrorist attack or natural catastrophe. Across Britain, multiple fires occur every day. For the year 2010-11, the FRS attended to 287,000 fire incidents (2011). The white paper *Our Fire and Rescue Service* calculates that fires cost the British economy seven billion pounds and caused the death of 492 people in 2001 alone. Although causing major damage, the event of fire is experienced, and dealt with, on a daily basis. Advancing work undertaken in relation to crime (O'Malley, 2010), I show in this thesis how anticipatory forms of governance have found a new field of application in their adoption by the FRS. Alongside visions of large scale disruption, these modes of governing the future are now applied to more banal risks such as fire.

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[6] This collaborative mandate is understood as the FRS National Resilience strategy in policy (See Communities and Local Government, *National Framework 08/11* (2008).
[7] Delivered in the same year as the Fire and Rescue Services Act, the Civil Contingencies Act establishes collaborative protocols for all emergency response agents in Britain. These protocols will be brought into practice in response to a major catastrophic event.

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The transformations instituted in the FRS since the turn of the twenty-first century speak of a move to the adoption of anticipatory modalities of governance in attending to the risk of fire. The *Fire and Rescue Services Act*, then, tailors emergent anticipatory techniques of governing the future initially found across a wider assemblage of security organisations to the governance of fire risk specifically. Since the Act, these techniques have transformed the way in which the FRS governs the risk of fire. I describe this shift to anticipation as the move from governing risk to governing through risk; a notion already holding some sway elsewhere (See Aradau and Van Munster, 2007).

Chapter two on the history of fire brigades in Britain shows that fire has been understood by its probability at least since the eighteenth century. Hazard ratings were used to provide fire insurance and fire fighters were drilled at times that fires were supposedly most likely to occur. What Adam (2000) might refer to as a repositioning of risk, however, is evident in the contemporary FRS. Instead of risk only being a means to understand uncontrollable future fires, fire's articulation as a risk is also used to internally structure the Fire and Rescue Service. Furthermore, risk is used to develop new strategies to govern potential fires in the present, before they occur. Risk projections are generated and constructed by the FRS itself. In turn, these risk projections inform the arrangement of the FRS as an organisation and shape the strategies of intervention the service deploys in the present.

Along with shaping the organisational arrangement of the FRS and moulding the strategies of intervention deployed to govern fire, the identification of fire risk is also used to legitimate the existence of the FRS in general and justify the interventions the service makes in the present. Fire's potential is not only calculated to be secured against in the contemporary then. Instead, risk is internalised and rendered productive in organising the arrangement of the FRS, shaping the strategies deployed by the FRS to intervene on fire risk and offering justification for the deployment of these strategies in the

present. What governing through risk means overall, then, is that risk identification has become the conditions of possibility for the FRS's operation and existence in the contemporary.

Governing through risk represents what Michel Foucault would call the contemporary 'problematisation' (1997, 117) of risk governance. As developed in chapter three, the terrorist events and natural disasters occurring at the turn of the twenty-first century and the response to such events found in the *Fire and Rescue Services Act* destabilised accepted understandings of fire and, consequently, introduced new ways by which fire should be managed. Along with the literature on anticipatory governance outlined above, the problematisation of fire risk governance is conceptualised in this thesis by drawing upon and contributing critically to debates contained within Foucault's lectures at the College De France in 1978-79; collectively known in the English translation as *Security, Territory, Population* (2007)[8].

In his own words, what Foucault offers in this set of lectures is 'a sort of history of technologies of security' (2007, 11) in an attempt to 'try to identify whether we can really speak of a society of security' (ibid)[9]. Ranging from town planning to market mechanisms for avoiding grain scarcity, these technologies form the security apparatus or 'dispositif' (2007, 63). The practices found in this apparatus are the result of the problematisation of how to govern and regulate early liberal societies of the eighteenth and nineteenth centuries. What security takes as the object which needs to be governed is the population. In *Society Must Be Defended*, Foucault refers to population as 'a multiplicity of men, not to the extent that they are nothing more than individual bodies, but to the extent that they form, on the

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[8] Supplementing the focus on this text are two other collections from Foucault's lectures at the College De France: his 1975-76 lectures translated as *Society Must Be Defended* (2003) and his 1978-79 lectures translated as *The Birth of Biopolitics* (2008).

[9] The notion of security in Foucault's work does not appear in the same way as the term is commonly used in the contemporary: as a set of practices and institutions attending to majorly contingent events. What Foucault is marking out with security, instead, is the emergence of a new logic by which to manage society in general. Through security, Foucault is arguing that a new form of power is evident with the development of liberal societies. In contrast to the pre-existing forms of power known as sovereignty and discipline, security operates in new spatial and temporal ways. Foucault notes that mechanisms of security operate within society itself rather than from central position, being embedded, then, within the free movement and normalising structures of the population. In analysing this population, security seeks to work in anticipation of disruptive events before they occur.

contrary, a global mass that is affected by overall processes of birth, death, production, illness and so on' (2003, 242-3). Returning to *Security, Territory, Population*, population not only accounts for human beings but humans in their material surroundings and the events which occur in these surroundings. 'Population' (2007, 70) then; 'is dependent on a set of variables. Population varies with the climate. It varies with the material surroundings. It varies with the intensity of commerce and activity in the circulation of wealth' (ibid).

It is to the events and gradual trends demarcated from the population that techniques of security apply and mould themselves. Foucault places emphasis here on the regimes of analysis and knowledge which frame the object of population and record how populations are ordered and reordered by events occurring. Analysis of these events and how they normalise or order populations allows the 'absolutely crucial notion of risk' (2007, 61) to rise to prominence in determining where and when security interventions should take place. Risk refers here to potential events which might disrupt the order of populations. Through this notion of risk, not only is security enacted as and when disruptive events occur. Instead, security can work 'on an estimate of possibilities' (2007, 20) and in anticipation of a disruptive events' unfolding.

Foucault's security *oeuvre* is important to this thesis because of its focus on the forms of knowledge, technologies and analysis which facilitate new modes of governance and intervention ushered in by security. As discussed at length later in this introduction, governing through risk is facilitated and conditioned by a set of digital risk analysis technologies which have accumulated in the FRS since the turn of the century. These technologies render fire risk emergent and, in doing so, allow the FRS to enact different strategies of intervention in anticipation of the event of fire. The research undertaken for this thesis produced empirical material on this set of risk analysis technologies.

Foucault's claims are critically engaged with in exploring how risk analysis technologies enable new modes of governance in the FRS. In application to the analytic technologies deployed by the FRS, I argue that Foucault's work on security can provide a useful base for understanding how risk is governed by the FRS. At the same time, however, Foucault's claims must be revised in lieu of how governance takes place through risk analysis technologies in the FRS.

Departures must be made, for instance, where Foucault uses the notion of population to show how human subjects are governed at the level of their most basic biological features, ushering in what Rose refers to as a 'politics of life itself' (2007, 1). Elements of Foucault's argument and, especially, other literature which draws upon Foucault[10] can only go so far in explaining how subjects are governed by organisations which seek to attend to potential futures. I demonstrate in this thesis how the introduction of lifestyle analysis technologies in the Fire and Rescue Service mean that governing through risk is necessarily anchored by new ways to understand and constitute human life as a subject of power. Although concerned with the life of humans, what takes priority in actualising new forms of governance is how, in Dillon and Lobo-Guerrero's terms, this life is 'informationalized' (2008, 1) by information on the way in which life is lead.

Although departed from in some cases, Foucault's work on population is useful in other cases. This is evident where, rather than referring merely to human life, population is used by Foucault to conceptualise human life in its material-spatial parameters and the events which occur therein. This broader definition of population allows what Foucault refers to as the 'space of security' (2007, 20) to be interrogated in its appearance in the risk mapping technologies used by the FRS. In chapter six on risk mapping, I give attention to how Foucault sees security as requiring society to be seen as a milieu to be governed. Mostly ignored in literature surrounding Foucault (see O'Grady, 2013), this notion of milieu is

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[10] In chapter seven of this thesis, I give particular attention to Agamben's claims around the governance of subjects at the level of bare life (1998) and also Mbeme's work on necropolitics (2003).

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useful in explaining the risk mapping analysis being undertaken in the contemporary FRS. Foucault's

commentary on the milieu is drawn upon to show how, as the newly incumbent rationality of the FRS,

governing through risk considers elements within a population both by their circulation and inter-

relationality within space. Building on Amoore's work on mobile normativity (2006), I claim that the

future distribution, frequency and consequence of fire rates within populations is a matter understood

as integrally bound to the service's own ability to arrive quickly at the scene of an incident and cross-

manage geographically disparate resources.

Spatial analysis is not just used to understand fire risk distribution but also to conceptualise how the

service considers itself. In relation to what Adam was seen to claim above with regard to the

repositioning of risk, I argue in chapter three and five that governing through risk makes the FRS a more

reflexive organisation which considers its own performance as contributing to the possibility and

consequence of fires. The analytic technologies which have risen to prominence in the contemporary

FRS reflect a trend noted elsewhere in which visions of contingent futures are used, in Dillon's terms, 'to

regulate, evaluate and limit' (2007b, 45) the internal composition of governing organisations themselves.

I open up this question of the internal composition of the FRS by further exploration of what Foucault

means by describing security as an apparatus. In chapter five, the notion of apparatus is applied to

research which focuses on the service's use of performance monitoring software to ensure that strategic

priorities are met. The notion of apparatus is an important construct for demonstrating how the

software functions are reliant on coordination and the forging of relations across the FRS. However,

Foucault's understanding of relationality in apparatuses needs to be revised to properly conceptualise

both the complexity of relations which facilitate software's functioning and how these relations can

make strategic decision making difficult. For instance, contesting staff narratives develop around

software and bring into question the reliability of risk projections produced. I bring Foucault's notion of

apparatus into critical conjecture here with both Deleuze and Guattari's (1998, 2003) and Latour's (2005)

descriptions of another relational construct: assemblages. Points of synthesis between the notions of

apparatus and assemblage grasp the complexity of the FRS as an organisation by showing how risk

analysis technologies not only facilitate but also complicate the service's ability to govern the future.

Foucault's security *oeuvre* is returned to in discussing the inevitable fact that risk cannot eliminate the

uncertainty around future events. It has been argued in some literature that uncertainty challenges the

plausibility of risk governance (Beck, 2000). In opposition to this argument, Foucault argues that the

security apparatus is engaged in a 'treatment of uncertainty' (2007, 11) which involves, in Lobo-

Guerrero's terms, 'making uncertainty fungible' (2011, 13). This harnessing of uncertainty is evident

where exercises are designed by the FRS to envisage fire events which possess a novelty to them and

cannot be known through data on previous incidents. Following de Goede (2008) chapter eight argues

that, rather than a challenge, uncertainty becomes a source of creativity in developing new techniques

by which to imagine potential futures. Wielding the creativity of uncertainty is evident in the FRS's use

of less conventional knowledge associated with visual and audio technologies, to envision, and govern,

the future.

1.1 Research Objectives

Three specific objectives underpin this research into the adoption of anticipatory modes of governance

in the contemporary FRS. Firstly, I aim to identify and assess how fire is known as a risk. To achieve this

objective, I examine the different analytic technologies used in the FRS to generate accounts of fire risk.

Through examining these analytic technologies, I inquire into the kinds of data that are drawn upon to

calculate and envision fire risk. Furthermore, I outline the calculative logics by which these technologies

operate and the organisational routines which develop around these technologies to show how fire risk

is rendered emergent.

Following on from this first objective, the second objective of the research is to examine how the projection of fire risk makes possible new forms of strategic action and decision making. This objective is met by investigating how accounts of fire risk shape and allow the design of new forms of strategic action which intervene in anticipation of fire. In addition, I assess how projections of fire risk facilitate decision making around, and the deployment of, these newly formed strategies before the occurrence of fire.

The final objective is to draw on the first two objectives to advance theoretical understandings of contemporary modes of governance. This objective is used to examine and discuss the technical, ethical and political complications and implications of governing through risk in the FRS. I achieve this objective through pursuing a number of lines of inquiry. These lines of inquiry include assessing how fire, populations and space are constituted as objects of anticipatory governance through risk analysis technologies. Through this objective, I also investigate how governing through risk engenders internal structural transformations in the contemporary FRS along with how uncertainty around the future is dealt with in enacting anticipatory governance.

1.2 Arranging the Case: Methods and Methodology for Researching Data and Decision in the Fire and Rescue Service

The research objectives outlined above have been met by conducting a case study of the Fire and Rescue Service. The main problems which inform the research design and methodology of this thesis revolve around the notion of arrangement. I give the term arrangement two meaning here. Firstly, my research methodology must negotiate with problems which arise due to the organisational ordering of the contemporary FRS; its arrangement and coordination as an institution. Secondly, the term arrangement is applied to the configuration of that which generates accounts of fire risk: what I call the

digital infrastructure of the service. This digital infrastructure encompasses the data, analytic

technologies and organisational routines which render fire risk an object of knowledge and governance.

Following de Goede's use of the term in particular (2012), the service's organisational arrangement is

one that takes a governmental form. By governmental, I mean that the FRS is administered and co-

ordinated by the relations between disparate sites. Firstly, there is the central government site from

which the FRS is organised. This central government sites is currently known as the Department for

Communities and Local Government (CLG). Secondly, there are the local sites of the regional FRS

headquarters, of which there are forty six across Britain[11].

Understanding the different roles these sites play is crucial for the methodological approach and

research design adopted in this thesis. The national, central site outlines and defines the overall

strategic goals of the service. This is the site, then, where broad organisational changes to how the FRS

governs are established through the creation of new policy and legislation such as the *Fire and Rescue*

Services Act. The precedents of what I term governing through risk were initially designed and

implemented from this site.

 It is at the level of local, regional headquarters that policy and legislation such the *Fire and Rescue*

Services Act comes to impact on the organisational and operational life of the FRS. Although established

from its central site, governing through risk is actioned as the new governmental rationale or *modus*

operandi of the contemporary FRS at local, regionally bound, sites of authority. It is at local sites that

governing through risk changes how the FRS strategically intervenes on fire.

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[11] At the time of writing, there are a number of consultations ongoing in Britain considering the possibility of merging regionally proximate Fire and Rescue Services. These mergers are often motivated by the need for financial savings, as in the case of the possible merger between East and West Sussex FRSs (2011).

It is a local site of the FRS which supplies the case for my research. This is because it is at local sites that governing through risk is practiced. Only through researching a local site of the FRS is it possible, then, to make a broader argument about the instituting of governing through risk in the FRS more generally.

It is within a local site of the FRS that the other type of arrangement I have researched is found. This arrangement refers to what I call the digital infrastructure of the FRS. The digital infrastructure is approached methodologically as an arrangement because it refers to a collection of analytic technologies found in the service. Each technology must be considered by its function of generating different accounts of fire risk. As will be discussed in more depth below, however, the analysis that technologies perform is reliant on multiple processes on going across the digital infrastructure and the relations which are forged between technologies. As such, the digital infrastructure is researched both by how fire risk projections are generated by individual technologies but also how these projections are dependent on the multiple databases and processes of the digital infrastructure.

Multiple methods were drawn upon in providing the empirical material of this thesis. Overall, three methods are used. These methods are: ethnographic observation, semi-structured interviews, textual analysis[12]. The empirical material these research methods generated is treated as inter-related throughout the thesis because of how processes of risk analysis in the FRS are underpinned by the inter-relationality of different technologies. Multiple research methods were required, then, to properly account for how projections of the future are dependent on the relations between different databases.

Taking place over two-three month periods, ethnographic observation focused on three teams in one of the forty-six regional headquarters of the FRS. These teams are known as: Corporate Planning and Performance (CPP), Learning and Development, and Community Safety. The Learning and Development

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[12] Archival research methods were used to generate the empirical material found in chapter two on the history of fire governance. Being exclusively deployed to explore the history of fire governance, archival research is discussed in chapter two.

team were researched because of their responsibility for the construction of exercises which assess and develop new protocols for future fire events. The Community Safety team featured in this research in terms of their undertaking of fire investigation whereby the FRS gathers data from the scene of fire incidents. In addition, observation of the Community Safety team focused on their carrying out of Home Fire Safety Checks (HFSCs); a key component of the FRS's prevention strategy. The ethnographic observation, however, gave most attention to the CPP team. Containing a Chief Analyst and two analysts, CPP manages three of the four software packages which make up the primary empirical focus of this thesis[13]. As such, CPP is a hub for the analytic processes researched in this thesis. Due to the strategies they formulate and the software they use to analyse fire risk, these teams were focused on overall because they are at the forefront of delivering the new anticipatory modes of governance implemented in the FRS.

Ethnographic observation was used to unpack the processes by which different analytic technologies generate accounts of fire risk. Observation focused on personnel in their daily routines in managing different databases and interfacing with databases to undertake analysis. In practice, this meant sitting with individual members of staff across the three teams whilst they demonstrated the processes by which risk analysis is undertaken and accounts of future fire risk are generated. Demonstrations were undertaken by staff in regard to each of the software components discussed at length in this thesis. These demonstrations took place within the teams which used the software. Along with individual team members demonstrating this process, risk analysis required collaboration between multiple staff at some points. As such, ethnographic observation also involved recording the collaborative moments of different analytic processes. Collaboration means the interaction between different members of staff in

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[13] The CPP is responsible for the management and use of the Fire Service Emergency Cover Toolkit (FSEC), Performance Based Views (PB Views) and MOSAIC. The other package discussed at length in this thesis, Particle Illusion, is used in exercises to visualise potential future fire incidents. Particle Illusion is used by the Learning and Development team.

generating risk analysis. The observation of staff demonstration lasted from the start of the analytic process to its end product: the projection of fire risk.

Firstly, observation of the analytic process involved identifying how data required by different software were gathered and sourced. Initially, I recorded the import and export functions of different technologies. Inbuilt within software, these functions enable the automatic sourcing of data from both inside and outside of the FRS. In relation to what is called the Fire Service Emergency Cover Toolkit (FSEC)[14], for instance, personnel stated that an import function to an Ordinance Survey database allowed the creation of maps which could be updated every six months[15]. It is by automatic import functions that most data are acquired. Ethnographic observation also showed, however, that some data were gathered manually by staff. Personnel thus demonstrated how data were gathered by emailing members of staff for data which are not universally available. In other cases, data were manually acquired from other databases via the use of digital storage facilities[16]. In their use of what is called MOSAIC[17] software to generate risk profiles, staff extract data from the Incident Recording System (IRS) which records the post-codes in which fires have occurred. In the case of MOSAIC, staff transfer data on the post-codes in which all fires over the last three years have occurred into an Excel spreadsheet which can then be imported into MOSAIC. By observing staff demonstrating how they gather data, I identified and recorded the kinds of data used in different software.

Once the stage of data gathering had been observed and recorded, I observed how staff integrated data in different software. I recorded how this process of integration varied across the different software researched and again relied upon both the automatic capabilities intrinsic to software and the manual

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[14] Discussed in depth in chapter six, FSEC is a risk mapping device used to improve FRS response times to future fire incidents.
[15] Ethnographic observation of CPP 15/09/11.
[16] Ethnographic observation of CPP 19/09/11.
[17] Supplied by the Experian credit checking company, MOSAIC is a software package used by the FRS to identify people particularly vulnerable to fire risk. MOSAIC is engaged with at length in chapter seven.

intervention of staff. In demonstrating the use of FSEC, I observed that the data supplied by Ordinance

Survey were automatically superimposed by data on the geographical coordinates of fire incidents[18].

Integration only required activation from staff by the click of a button here. In other cases, I found

process of integration that relied on the manual capabilities of staff. With Particle Illusion[19] software

used to imagine potential fire incidents, visual data were uploaded and integrated with audio data by

staff themselves. Staff here would have to ensure that the visual representation of fire on the screen

corresponded in intensity to the sound of a fire[20]. This meant deploying audio data at a particular time

in a video clip of a fire. Through ethnographic observation of staff demonstrating how they use different

software I documented different ways in which data were integrated.

I was also able to document the different methods for calculating fire risk by ethnographic observation. I

recorded how calculation proceeds by analysts discovering relations between different data and

outlining trends in data over time. With MOSAIC, researching calculation involved investigating and

describing personnel undertaking what is known as over-representation analysis[21]. On an Excel

spreadsheet, human populations are categorised by the post-code they inhabit. These categories

descend according to the percentage proportion of the whole population which occupies each post-

code. Adjacent to these categories is the percentage proportion of the region's fire rate which occurs

within these post-codes. I discovered that what analysts were looking for in over-representation analysis

are instances in which the proportion living in a post-code is exceeded by the proportion of fires

occurring in this post-code. In another case, personnel demonstrated how performance analysis was

undertaken. In software known as PB Views, a target number of fires per day was set and subsequently

juxtaposed with the actual number of fires recorded per day. On the basis of whether or not targets

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[18] Ethnographic observation of CPP 09/09/11.
[19] Particle Illusion software is used to envision scenarios around which training exercises are developed. Particle Illusion is discussed in depth in chapter eight.
[20] Ethnographic observation of ICC Technician 25/10/11.
[21] Ethnographic observation of CPP 23/10/11.

were being met, I observed that analysts would judge how well different teams in the FRS were performing[22]. By observing how the relations between data were treated by staff, my research documented how fire risk is calculated through different software.

The stages of data sourcing, integration and calculation account for the arrangement and processes of the digital infrastructure which works to generate accounts of fire risk. Ethnographic observation revealed how the digital infrastructure operates by what John Law refers to as 'fractional coherence' (2002, 2)[23]. What fractional coherence means is how the singular analytic function of a specific technology is reliant upon relations with different technologies and multiple processes taking place across the digital infrastructure. I examined two kinds of processes which make projections of fire risk possible. Firstly, I scrutinised how individual analytic technologies function to make fire risk projections. I assessed these functions, however, by their reliance on multiple processes ongoing outside of the specific technology itself and within different components of the digital infrastructure. At the same time as showing how a particular technology calculated and projected fire risk, I looked at the relations this particular technology forged in order to fulfil this function. As I described above, these relations can be found in outlining where data are sourced for specific technologies or how different kinds of data are integrated with one another to facilitate analysis.

Simultaneous to demonstrating the different stages by which technology generated accounts of fire risk, ethnographic observation was used to inquire into how staff narrated the analytic process. Whilst

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[22] Ethnographic observation of CPP 05/08/11.
[23] Law introduces the notion of fractional coherence in his book *Aircraft Stories: Decentering the Object in Technoscience* (2002). In Law's own terms fractional coherence 'is *about drawing things together without centering them'* (2002, 2). In other words, fractional coherence is a way to reconcile the singularity of an object with the same object's investment in, and emergence from, multiplicity. For example, an individual risk analysis technology in the FRS is recognised as singular because it performs a specific function. This function can only be performed by this specific technology. Through fractional coherence, I explore how this specific function which makes a technology singular is only possible because of the technology relations to multiple processes taking place across the digital infrastructure. To perform a specific kind of risk calculation that only it can undertake, an individual technology is dependent on sourcing data from other software for instance or the interventions of different personnel.

observing the demonstrations of how they used software, I asked staff questions to prompt narration of the analytic process. These questions were designed to generate empirical material on the set of decisions which serve to guide the analytic process in generating accounts of fire risk. Questions focused initially upon why specific data were drawn upon for analysis. Staff were thus prompted to justify the selection of particular data over other data. Furthermore, questions focused on the problems which arise during analysis. In particular, these questions focused on how staff recognised problems at different stages in the process and how such problems would be resolved. Empirical material was generated, for instance, on how staff confronted problems around a lack of data and how they would subsequently draw upon alternative resources to facilitate analysis[24]. Alternately, personnel were questioned about whether they always trusted the risk projections generated by software and, if not, why they did not trust the analysis and how they would modify the results of analysis.

I have noted above that narration did not only focus on how software successfully generates accounts of fire risk but also focused on problems with analysis. Staff also revealed how multiple, contradictory narratives develop around software. Some of these narratives were technically based. Thus, staff were reluctant to use analysis which was 'only predictive'[25] rather than reflective of their experience with fires. In other cases, narratives elaborated upon broader ethical, organisational and political tensions which develop around the use of these technologies. For example, personnel raised concerns around whether or not individuals and populations could, and indeed should, be analysed to the level of depth some software purports to achieve through its calculation. Especially important for the third research objective of this thesis, narration opened research up to exploration of the wider tensions which complicate the service's capacity to govern through digital representations of fire risk.

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[24] Ethnographic observation of CPP 13/08/11.
[25] Interview conducted with CPP 14/10/11.

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By prompting narration on the analytic process, I researched decision making and its connection to risk analysis in two ways. Firstly, the research investigated what Amoore would call 'real time decision making' (2011, 31). This means how risk analysis generated from technologies enabled strategic decision making on how, where and when resources should be deployed to intervene on fire risk. Secondly, decision making was also researched in terms of how personnel in the service intervene to guide the analytic process in generating accounts of fire risk. Researching both of these types of decision was crucial to producing empirical material on how software produces risk calculations and, in turn, how analysis facilitates strategic decision making and action in the FRS.

The three teams featuring in the ethnographic research each participated in semi-structured interviews. Three interviews took place overall. For CPP and Learning and Development, interviews took place in groups, with the members of each team being interviewed collectively. Being the only member of staff that generates data used in the software discussed at length in this thesis, the Fire Investigator was the only member of the Community Safety team to be interviewed.

Interviews were used to generate more personnel narration of the analytic process. Questions expanded on issues raised in the ethnography by inquiring into how data are sourced, how data are integrated and the processes of calculation which underpin analysis. Interviews also generated empirical material which outlined how data, analysis and software condition and facilitate strategic decision making and the deployment of resources in attending to fire risk. Questions here focused on what kinds of risk calculations were used to appraise particular strategic approaches to fire risk and why. Extending empirical material generated from personnel narration, interviews generated further empirical material on the effectiveness of analysis in terms of facilitating strategic decision making and what problems arise in using analysis to enact strategy.

As noted, the interviews were undertaken in a semi-structured format. Questions in interviews were flexible and adapted to emergent themes which arose in the responses of participants. Depending on the answers participants gave, interview questions would, for instance, prompt participants to elaborate on particular topics which had arose. In other cases, questions would focus on specific elements of a participant's response to take the discussion to different areas. An example of how discussions proceeded in this semi-structured format can be found in an excerpt of the interview transcript in appendix 1.

By a semi-structured interview schedule, staff were encouraged to direct discussion. Staff raised issues that reflected how they interface with software in undertaking their different everyday duties. For example, participants of a higher rank in the service answered questions about different technology with reference to broader trends in the county's risk profile. In contrast, participants of a lower rank referred to the more technical issues such as getting software export functions to operate successfully[26]. Through the semi-structured format of interviews, empirical material was generated which reflected the complexity of making analysis inform strategic decision making. Interviews showed that the extent to which risk analysis informed strategic decision making was dependent on the supposed accuracy of risk projections and how well software was deemed to function.

Interviews also supplied empirical material on the analytic process which was not revealed during the ethnographic observations. This was because, rather than being treated in isolation, interview questions focused on the relation between risk analysis and strategic decision making. The Fire Investigator was interviewed, for instance, about the kinds of data gathered from fire incidents in which a fatality had occurred, how this data related to predictive risk analysis undertaken in CPP and what strategies this data would be used to inform. Prompted by these questions, the Fire Investigator revealed how data

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[26] Interview conducted with CPP 14/10/11

gathered from investigations were routinely drawn upon to verify the risk profiling undertaken by CPP which uses lifestyle data to gauge different levels of vulnerability to fire risk across the region's population[27]. The connection made between risk profiling and fire investigation, however, does not occur in any formal way using the import and export functions of different software and, as such, was not recorded during ethnography. I argue in chapter seven that the use of these two forms of analysis in conjunction with one another is pivotal in understanding how prevention is deployed by the service. Furthermore, the integration of this analysis raises important ethical, political and conceptual questions around how life is governed by the FRS and the level of depth to which human populations are known by the FRS in instituting new modes of anticipatory governance.

The final research method used in this research is best described as a textual and image analysis of the different software discussed. Textual analysis equated to my own first-hand interface with software as it processed data and generated fire risk projections on a computer screen. The computer screen was treated by its textual and image based output and how these outputs both represent data uploaded into software and work to visualise fire risk.

The use of textual and image analysis was first designed to meet research objectives and questions relating to how data are integrated to provide a foundation for risk analysis. What I inquired into here was how software orders data sourced from multiple databases through text and image. This involved recording the different categories in which data are placed by software. This categorisation or ordering of data in software makes data meaningful and significant for the analytic purposes of software. Fire incident data and its integration in numerous analytic technologies exemplify the importance of text and image in enabling general data to be used for the specific purposes of particular software. Sourced from

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[27] Interview conducted with Fire Investigator 17/10/11

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the Incident Recording System (IRS)[28], fire incident data are exported to many different analytic

technologies including both FSEC and PB Views which have been described above. In FSEC, fire incident

data are used to plot the geographic distribution of fire risk. I used textual and image analysis here to

record how fire incident data are made meaningful by being sorted and visualised according to the

occurrence of fires across a GIS map of the region governed in FSEC[29]. Inquiring into the textual and

image based output of software, research showed how the same fire incident data serves different ends

in PB Views. For data to serve different ends, it must be ordered and visualised differently in PB Views

from how it is ordered and visualised in FSEC. Instead of being uploaded onto a map, textual analysis of

PB Views demonstrated that fire incident data are spatialised within a simulation of the organisational

structure of the FRS. Fire incident data are integrated with data here that designates where specific fire

fighting responsibilities are fulfilled in the organisation. Rather than being made meaningful in terms of

showing the geographic distribution of fire, textual analysis revealed how the number of fires occurring

is used to assess how well different teams in the FRS are performing[30].

Textual and image analysis was also used to record how fire risk appears as the end-product of analysis

and calculation. In FSEC, for instance, the research inquired into how fire risk is understood as a

geographical and spatial phenomenon. This is due to the use of GIS mapping in FSEC. In researching

MOSAIC software, fire risk appears instead in tabular fashion. Incidents of fire are ordered and

differentiated by their unfolding in different post-codes and in relation to the supposed lifestyles found

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[28] The Incident Recording System is the central holding facility for data in the FRS. Through a real time data feed IRS receives and stores data directly from incidents which have occurred. IRS has the capacity to acquire data on a hundred and ninety-six elements of fire incidents. This ranges, for example, from recording the geographical coordinates of a fire incident to data on how many calls notifying the service of a fire incident.
[29] Textual analysis 09/09/11
[30] Textual analysis 11/09/11

in these post-codes[31]. Textual and image analysis detailed the different ways in which fire risk is made visible by different software.

Along with being applied to software, textual analysis was also used to investigate major policy and legislation documents since, and including, the *Fire and Rescue Services Act*. Rather than being used to query how data is ordered and made meaningful, textual analysis generated empirical material which served two ends here. Firstly, I analysed FRS policy documents to describe the contemporary institutional arrangement of the FRS. This analysis meant detailing where specific responsibilities of the FRS are fulfilled and how different institutional sites in the FRS relate to, and coordinate with, one another. I also used textual analysis to outline what governing through risk entails in more depth. This meant identifying the institutional practices which were instigated by policy seeking to make the FRS organise itself around, and justify its existence through, projections of fire risk. The research investigated documents produced at both the national and local coordinating sites of the FRS.

The national site, as I have stated, is where broad institutional changes to the FRS are set in motion. Subject to particular scrutiny was *The National Framework* (2011) and the *Localism Bill* (2011). *The National Framework* establishes the strategic priorities and direction of the FRS for the next three years. Through investigation of *The National Framework*, I was able to outline what I refer to in this thesis as the service's strategic architecture. I show in chapter three that this strategic architecture comprises three modes of intervention which operate on the basis of fire risk projections. These modes of intervention are: protection, prevention and response. In connection with research into the *Localism Bill*, *The National Framework* was also used to highlight and assess new institutional practices which, although not directed at intervening upon fires, have been ushered in as part of the organisational transformations which bring governing through risk into effect. Important here are the practices of

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[31] Textual analysis 12/09/11

auditing and accountability. As will be documented in chapter three, these practices ensure that the service justifies its activities through projections of fire risk and also coordinates locally disparate FRS sites towards overarching, national strategic goals.

Policy produced at the local sites of the FRS was also scrutinised. In particular, I investigated the *Integrated Risk Management Plan* (IRMP) (2011) and the *Annual Spending Review* (2010). Again created every three years, the IRMP outlines the most prevalent types of fire risk within a specific locality. In turn, the IRMP shows how the strategic priorities of the particular FRS discussed are tailored towards the specific types of risk outlined. The *Annual Spending Review* explains the spending of individual FRSs and indicates the budgetary needs of the FRS for the next year. Through textual analysis, I inquired into how locally produced policy corresponds to the priorities set at the national level. Through engagement with the *Annual Spending Review*, I documented how local FRSs account for spending in relation to the prevalence of fire risk within a region. The IRMP relates to *The National Framework* and was researched to query how local FRSs meet strategic priorities set at the national level. It is within the IRMP, for instance, that locally bound strategic priorities for response, protection and prevention are set out in detail.

1.3 Chapter Outline

This thesis is organised in two parts. The first three chapters situate the FRS in both its historical and contemporary context. The contemporary problematisation of fire as an event and the FRS's operation are outlined here and the key themes of this problematisation explored in this thesis are introduced. Following these three chapters, four chapters focus each on an individual analytic technology found in the contemporary FRS which undertakes risk analysis and informs strategic decision making.

The chapter immediately following this introduction offers a genealogy of fire brigades in Britain since their inception in the aftermath of the Great Fire of London in 1666. As discuss in the chapter itself, I

conducted archival research to generate the empirical material for this historical inquiry. Retaining focus through subsequent chapters, three interrelated aspects of fire governance are traced through the different historical periods researched. As an everyday event with dangerous proclivities, I explore in this chapter how fire has been mediated by different forms of knowledge and analytic regimes. Interwoven with the different ways in which fire has been comprehended through knowledge, the chapter also discusses the development of different strategic approaches to fire and how fire brigades have been institutionally arranged and organised.

Chapter three moves to consider the FRS in its contemporary political surroundings and discusses in depth the new rationality under which the service now operates. In relation to discussion in the preceding chapter, I outline how a new problematisation of fire as an event operates in the contemporary which is governed through new strategies of intervention. In relation to the history chapter, I argue that, in the present day, governance of fire is not merely enacted by reacting to fire as an when it occurs. Rather, the FRS is organised around, and its interventions in the present are justified through, identifying fire as a risk. I argue that this new problematisation of the FRS, called governing through risk in this thesis, arises in alignment wider governmental shifts. These wider governmental shifts are the decentralisation of the FRS and the emergence of auditing and accountability as key institutional practices in the FRS. This chapter also shows how governing through risk is brought into practice by strategy which works in anticipation of fire. The chapter thus introduces what I call the strategic architecture of the service. This strategic architecture is comprised of three modes of action known as: response, protection and prevention.

Chapter four discusses that which conditions and facilitates the decision making which brings into practice these anticipatory modes of governance. In this chapter, I discuss in depth what I call the digital infrastructure of the service. I introduce the analytic technologies which are researched in this thesis

and what specific elements of strategy these technologies work to inform. I argue, however, that the connection between data and strategic decision making cannot be confined to the algorithmic processes of software alone. Echoing the double sided character of decision making described above instead, the production of knowledge on the future is complicated by the analyst's relationship and interface with software. I stress how this interface is situated within the specific organisational context of the FRS and thus reflects the ethical, political and technical problems which intervene in attempting to govern the future through risk analysis.

The second part of this thesis begins with chapter five. As the FRS has been described by its contemporary problematisation, and the strategies and technologies carrying out this new problematisation of fire governance have been outlined, the thesis now turns to show how digitally driven projections of fire risk facilitate and condition strategic decision making. With auditing and accountability already discussed in chapter three, chapter five elaborates on how governing through risk is a self-referential, reflexive matter. By reflexive, I mean that the contemporary problematisation of the FRS turns attention to how the FRS performs its duties. The performance of the FRS becomes understood as partially determining the prevalence and consequence of fire risk. The software which enacts this reflexive turn in the FRS is known as Performance Based Views (PB Views). Rather than focusing on a single aspect of strategy, I discuss how PB Views is constructed out of the digital infrastructure and how PB Views mediates between human relations in the service. Foucault's notion of a security apparatus is synthesised here with conceptualisations of the notion of assemblage (Deleuze, 2003, Latour, 2005) to show how organisational tensions develop around the very technologies which seek to enact governing through risk. I discuss here how software not only facilitates decision making but can also redraw lines of relations found in the FRS. As a mediator of relations within the FRS, PB Views can obstruct or renegotiate the ability to strategise and govern.

In chapter six I focus on what is called the Fire Service Emergency Cover (FSEC) toolkit. Based on risk mapping technologies which show fire distribution in relation to the current location of FRS resources, FSEC seeks to open up response strategy to appraisal with the aim of improving future response times through better management of resources. Conceptually, FSEC offers important insight into how the FRS imagines the region as a milieu (Foucault, 2007, 20) to be governed. Through spatial co-ordinates, response can be thought of as a problem worked upon in anticipation of the event itself. I demonstrate that strategic decision making is shaped around and responsive to maintaining normative social order. This normative order is envisioned in FSEC through serialised circulation or what Amoore refers to as the making and remaking of a 'mobile norm' (2011, 31). I argue that FSEC shows how circulation becomes a means through which response can be critically considered in anticipation of fire.

Chapter seven shifts focus to how the FRS seeks to govern and intervene upon human populations. I focus on the governance of human life through research into the service's deployment of MOSAIC technology to target a particular type of subject; the subject which is vulnerable to fire risk. MOSAIC serves to enable decision making on prevention strategy which is deployed through Home Fire Safety Checks (HFSCs). Analysis from MOSAIC is integrated with data from investigations into fire fatalities to target vulnerable subjects. How human life is known through data, and constituted as a subject of governance, is primarily through analysis of potential lifestyle attributes. By critically engaging with literature around bio-power and 'the politics of life itself' (Rose, 2007, 1), the use of MOSAIC suggests that governed subject-hood undergoes crucial transformations in alignment with the consolidation of anticipatory modes of intervention. Although playing an important underlying role, the move towards anticipatory forms of governance means that it is not life itself which is immediately attended to. Instead, what needs consideration is the style of life and how lifestyle analysis reinformationalises life and rearticulates governed subject-hood to facilitate modes of governing directed at the future.

Chapter eight examines the construction and undertaking of exercises in the FRS. Exercises work to imagine future fire scenarios which need to be prepared for. Exercises are envisioned through Particle Illusion software and the physical space of the Incident Command Centre (ICC). This chapter deals with an inevitable problem which anticipatory modes of governance face; the fact that futures are uncertain and can, to some degree, evade being known. This problem is played out in the FRS by the use of analytic techniques which, with regard to other components of the digital infrastructure, are unconventional. As a technology developed for cinema, Particle Illusion imagines future fire events through aesthetic forms of knowledge, relying on sound and vision rather than risk maps, performance charts and vulnerability graphs. Used to simulate the atmosphere of future fire incidents and played out in the physical space of the Incident Command Centre, exercises are constructed through Particle Illusion to assess and develop response protocols in preparation for types of fire incidents whose complexity cannot be known through data gathered from past fire events. Far from challenging the capabilities of working on the future, I argue that uncertainty becomes a source of creativity, expanding the limits of how governing through risk might be put into practice

I return to and summarise the main argument of this thesis in the conclusion. I claim that the FRS is the subject of a new problematisation in the contemporary, in which the conceptualisation of fire as an event, and how it should be governed, has been renegotiated. This problematisation is underpinned by what can be said about fire as a risk and as an event of the future which can be worked upon in the present. The digital infrastructure of the FRS that has emerged over the last decade is crucial to this new problematisation of fire and its governance. Identifying fire risk in different ways and working to shape and justify strategic decision making, this digital infrastructure facilitates and conditions the FRS's ability not only to act on risk. Rather, the digital infrastructure makes projections of fire risk the service's conditions of possibility. Projections of fire risk mould the FRS's organisational shape and justify the interventions the service makes in the present. Read through the significance attributed to the digital

infrastructure, the key organisational, political and conceptual implications of governing through risk are summarised. I draw on examples from throughout the thesis to make a number of different conclusions concerning this new rationality of governing through risk. These conclusions extend to how the FRS is configured as a security apparatus in the contemporary, how population, as the object of political strategy, is rearticulated through new analytic technologies and how modes of anticipatory governance and strategic action have found a new field of application with the everyday risk of fire. I also offer future trajectories for researching the transformations witnessed in the FRS since the turn of the century.

Chapter 2. Tracing Fire Governance through Time: A Genealogy of Fire Brigades

2.1 Introduction

This chapter focuses on three periods in the history of organised fire brigades and fire governance in Britain. Initially I explore the event out of which fire brigades[32] first emerged; the Great Fire of London in 1666. Due to the failure of King Charles II to provide adequate resources in the aftermath of the Great Fire, organised fire brigades were first formed by the burgeoning insurance industry of the time; giving rise to what were known as the insurance brigades. I then trace the development of the insurance brigades up to their transferral into the remit of local authorities in the nineteenth century. Finally the chapter discusses brigades as a mature appendage of local authorities. I concentrate here on the contribution of fire brigades to air-raid precautions before and during the blitz between 1936 and 1941.

Empirical material on these periods was generated through archival research in three London libraries: the London Fire Brigade (LFB) Library, the Guildhall Library and the British Library. Through research in the LFB Library, I identified and examined a number of incident logs, statistical records and annual reports produced by the London Fire Brigade between the middle of the nineteenth century and the blitz. In the Guildhall Library, I scrutinised premium records, advertisements and policy documents of the insurance companies which subsidised fire brigades up until the mid nineteenth century. In the British Library, I investigated the role of fire brigades in the blitz. The documents I reviewed at the British Library were comprised of a series of air raid precautions booklets (1938, 1939), the Air Raid Precautions Act (1937) and reports which estimated the damage that incendiary bombing might cause (1936).

I also researched secondary literature on the history of fire brigades in Britain (Ewen, 2010, Bell, 1923). This literature supplied insights into the broader socio-political circumstances in which fire brigades

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[32] It is important to stress that this chapter is only concerned with the history of organised fire brigades in Britain. As Goudsblom (1992) states, fire brigade formation itself can be traced back to Ancient Rome.

were entangled at different periods. For instance, how fire brigades were organisationally coordinated between public institutions and private companies was investigated through investigating this secondary literature. In other instances, this literature offered rich and in-depth descriptions of particular fire incidents which instigated reform of the fire brigades' organisational arrangement and their strategic approach to fire. This secondary literature was crucially important for showing how fire brigades transform as security apparatuses through history.

Rather than being described through a linear historical narrative, I offer a genealogy of fire brigades in this chapter. In relation to linear historical accounts, Foucault states that genealogy 'has a more important task than to be handmaiden to philosophy, to recount the necessary birth of truth and values' (1991, 90).Through adopting a genealogical approach, I do not search for any supposed origin or essence of fire brigades. In other words, I do not understand fire brigades to have a teleological goal such as the need to save lives or protect cities. Because no such origin exists, I do not understand the historical development of fire brigades to be structured or pre-determined to fulfil a singular goal.

Rather than the historical development of fire brigades being pre-determined by such an origin, I understand fire brigades as dynamic organisational entities. For Foucault then, the aim of this chapter would be to produce 'a differential knowledge of (fire brigades') energies and failings, heights a degenerations, poisons and antidotes (ibid, my brackets). This differential knowledge arises from arguing that the development of fire brigades is determined by the wider, changing, historical and socio-political circumstances in which the development of fire brigades takes place.

I trace the genealogy of fire brigades through three crucial and interdependent aspects of fire governance. Following discussion in the introduction to this thesis, I return in this chapter to reflect on how fire brigades have been organisationally arranged by, and coordinated between, different institutional sites throughout history. I will document how the organisational arrangement of fire

brigades continually changes throughout history. Changes to the arrangement of fire brigades are evident in how different institutional sites relate to one another at different times in coordinating the provision of fire governance.

I suggest that the arrangement and rearrangement of fire brigades facilitates developments in two other aspects of fire governance. I argue that new ways of conceptualising fire as an event through knowledge become possible depending on what sites coordinate fire brigades. I explore here the different calculative logics and regimes of analysis which have been applied to make fire an object of knowledge at different times. How fire is conceptualised opens up space, furthermore, for the development of new strategic approaches by which to govern fire. I will explain, for instance, how response strategy is made and remade in accordance with developments in how fire is calculated. The reconceptualisation of fire through knowledge thus engenders the development and redevelopment of strategies for governing fire.

The genealogical account of these three aspects of fire governance shows how fire and the operation of fire brigades is the subject of continual problematisation and re-problematisation throughout history[33]. Crucial also for the purposes of the next chapter, problematisation refers to processes by which accepted understandings of fire and the operation of brigades become destabilised and renegotiated over time. To return to Foucault, problematisation equates to identifying a 'certain number of factors' (1997, 117) found at different historical moments which make accepted ways of thinking about fire and

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[33] In an interview with Paul Rabinow entitled *Polemics, Politics and Problematisations*, Foucault defines problematisation as 'the development of a domain of acts, practices and thoughts that seem... to pose problems for politics' (114, 2000). These acts, practices and thoughts are tied to historically specific conditions. Sexuality, for instance, 'doesn't exist apart from a relationship to political structures, requirements, laws and regulations' (ibid). Accepted ways of doing things are emergent in a way determined by wider political conditions. However, other ways to perform practices like sexuality do exist. Problematisation would be the promotion of these other forms of a particular practice in order to challenge accepted practices. Read under this definition of problematisation, the history of the FRS is a history of problematisations; a history of ways in which accepted modes of fire governance become accepted and, later, are inevitably destabilised. Changes to the practices of fire governance, and the new modes of fire governance ushered in, are produced by wider changes to the political conditions in which fire governance is practiced.

fire governance 'uncertain, to have made it lose its familiarity, or to have provoked a certain number of

difficulties around it' (ibid). What I explore through problematisation initially then is how accepted

understandings of fire and how fire should be governed become challenged.

Problematisation also encompasses the changes which result from the renegotiation of how fire is

understood as an event and how the operation of fire brigades is rationalised and practiced. In addition

to conceptualising how consensuses around fire and fire governance are destabilised, problematisation

also addresses the new modes of governance that are ushered in. These new modes of governance are

supported by wider political arrangements. As I argue in the following, for instance, fire became

analysed by its impact on human life only when fire brigades were posited under the control of local

authorities. Before this moment, fire had only been known by its impact on the built environment

because fire brigades were controlled by insurance companies whose premiums only extended to the

protection of the built environment from fire. The arrangement of fire brigades, the introduction of

different analytic regimes to conceptualise fire and the development of new strategies of intervention

are emblematic of new problematisations of fire and fire brigade operation.

Genealogy serves another purpose in this thesis. As noted in other literature, genealogy can work to

offer a history of the present (See Elden, 2002). Due to the account of its past in this chapter, the

organisational arrangements, strategies of intervention and ways of thinking about fire which take

assumed status in the contemporary FRS can be contested in their supposed embeddedness. Developing

from the genealogy of the service I offer in this chapter, the next chapter explores how the rationality of

the contemporary FRS is a result of a new problematisation of both fire and fire governance.

Continuing my argument set out in the introduction, the contemporary rationality of the FRS can be

referred to as governing through risk. The present chapter shows that both the operation of brigades

and the prevailing conceptualisations of fire in the past are different from their problematisation in the

contemporary. Although conceived by its potentiality and risk I argue in this chapter that, in the past,

fire was considered as an event which could be managed strategically only as and when fires occurred.

Connected to this strategic understanding of how fire was to be managed I argue that a particular form

of decision making underpins the development of fire brigades. Decision making is reactive and shaped

around previous fire incidents. As I will show, for example, the insurance brigades were first formed

because of losses accrued by insurance companies due to miscalculations of the damage to properties

that fires caused. Later still, failures in dealing with fires in the blitz led to the nationalisation of fire

brigades in 1941. Rather than the future, fire brigades were organised around, and their existence

justified through, information accrued about fire incidents in the past.

It is with the precautionary logics which rise to prominence with the immanence of the blitz, however,

that governing through risk is found in its infancy. Rather than solely responding to fires as they occur or

organising the service around previous fire incidents, precautionary measures in the blitz begin to place

more emphasis on the potential of future fire events. Both the service's organisational arrangement and

the strategies the service formulates in the blitz are based on what can be said about fire as a risk[34]. I

argue in the next chapter that the nascent anticipatory logics found in fire brigades of the blitz take

centre stage in the contemporary FRS. It is in the contemporary that the service not only merely attends

to fire and fire risk. Instead, projections of fire risk both organise and justify the interventions the service

makes in the present.

2.2 A Kingly Failure: London and its Great Fire

On Sunday the second of September 1666, the Great Fire of London swept across the area around what

is now Monument underground station. The fire itself lasted for six days, decimating around four fifths

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[34] The development of risk based strategisation in fire governance at the time of the blitz only lasted until 1941. In 1941, a form of decision making shaped around the past was enacted in reaction to the failures of precautionary measures in responding to the blitz.

of London (Dolan, 2001, Wall, 1986). It is in the aftermath of the Great Fire that the first organised fire brigades were formed.

London's population was growing rapidly at the time and problems such as over-crowding, poor housing conditions and hygiene developed in parallel with this growth. Susceptible to the spread of disease, the circumstances in the city in the early 1660's lead to the great plague which killed 70,000 of London's inhabitants. At this time, fire was an everyday occurrence, albeit one with dangerous potentiality. Fire was 'simultaneously domesticated, necessary and familiar' (Dolan, 2001, 383) whilst possessing 'unpredictable and dangerous possibilities' (ibid). Fire provided heating and the means to produce everyday necessities. At the same time as being a 'good servant' (2001, 383) fire was a 'bad master' (ibid) however. When fire got out of control, as it did on the second of September 1666, it caused major devastation[35].

At the time of the fire, there was an increasing interest in documenting life through lists. As Wall documents, the Great Fire

> coincided with and perhaps contributed to a cultural fascination for lists:
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> newspapers tabulated victories at sea... topologies and maps increasingly
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> listed as well as depicted streets: The Royal Society was busy identifying and
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> labelling the phenomena of both microcosm and macrocosm (1986, 26)

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[35] Sustaining life whilst also placing life precariously, Gaston Bachelard (1964) sought to outline the paradoxical ontological status of fire. Fire is 'the ultra-living element' (1964, 7) in its production of a plethora of contradictory affects. 'It is', for Bachelard, 'gentleness and torture' (ibid). It is 'cooking and the apocalypse' (ibid). Bachelard can be agreed with where he states that the 'destruction' (1964, 16) that fires such as the one in 1666 caused must be understood as 'more than change' (ibid). Instead it can be 'renewal' (ibid). Echoing the troubling, contradictory character which fire is attributed with, many historical studies note that the Great Fire was a major contributor to wiping out the great plague which ravaged London (See Dolan, 2001).

Lists were generated to demonstrate the damage to buildings, loss of human life and the spatial extent

of the Great Fire. The Ordinance Office, which charted the spread of population in London, estimated

that 'the fire had laid waste to about 436 acres, 400 streets, 89 parish churches and 13,200 houses'

(2001, 382) although the fire 'does not seem to have caused many deaths' (ibid) at least directly[36]. A

map produced by Wenscelus Hollar shows the extent of fire by dividing the city into different streets

and neighbourhoods (See figure one)[37].

Along with being articulated through lists and maps, the fire was conceptualised by its impact on the

heterogeneous but inter-related circulatory elements that collectively comprised London's population.

Accounting for its cause and spread, a circulatory description of the fire was offered in Edward

Waterhouse's *Short Narratives of the Late Fire in London* (1986). The fire spread in a way 'that

forwarded by a Bakers stock of wood in the house, and by all the neighbouring houses, which were as so

many matches to kindle and carry it on to its havock' (1986, 3). According to Waterhouse, the fire was

proliferated by 'other combustibles, and with the houses opposite to it, and closed with it at the top,

burned three ways at once' (ibid). Waterhouse's description summarises how major fire events were

thought of at the time. Fire was primarily understood by its spread and the specific space in which this

spread takes place[38].

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[36] Blackstone claims that the fire would have 'left some 100,000 people homeless' (1957, 37), around a quarter of
the whole city's population at the time.

[37] Apparent in the aftermath of the Great Fire was an early intimation towards the hold information in the form of
spatial knowledge and lists would have in knowing and understanding populations[37]. Such knowledge was pivotal
to describing the changes afoot in London. At the time of the fire London was becoming an 'industrial rather than
pre-industrial city' (Wall, 1986, 5). This historical shift was symbolized for Wall in Charles II's 'encouraging new
forms of arts and sciences, trading power and (the fact that) ... merchant's power was increasing' (ibid, my
brackets). New companies such as the East India Company were being established along with the bank of England
at the end of the seventeenth century.

[38] Understanding the fire's instigation by the intersection of multiple elements producing an event is evident in
King Charles II's committee investigating how the Great Fire started. The only conclusion the committee could
reach was that 'after many careful examinations ... nothing hath been found to argue the fire in London to have

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At first no reaction to the fire was forthcoming from government and insinuations were made against the Mayor John Bludworth 'of not working hard enough to contain the fire' (Dolan, 2001, 383). In lieu of such accusations, *An Act for Preventing and Suppressing of Fires within the City of London and the Liberties thereof* (1668) was established in 1668. The city was divided into four geographic quarters and '800 leather buckets, 50 ladders... 24 pickaxes, 40 shod shovels' (Blackstone, 1957, 47) were distributed. This equipment was put to use when alarms were raised by watchmen who surveyed each of the four quarters of the city. Showing intent to defend against future catastrophes, the Act states that the provisions made are a reaction to the 'Dreadful danger of fire in the future' (1668, 3).

Interventions enacted in anticipation of future fires were evident in this Act. Trying to act against future fires, however, was not conceived in alignment with the resources needed. As Wright (2008) notes, the response of the King and parliament to fire after 1666 was deemed inadequate as not enough resources were supplied for the number of fires which routinely occurred. At this point, fire fighting broke away from being a minimal concern of the sovereign and became the responsibility of private companies. A new agent of governance emerged: the insurance brigades.

2.3 The Insurance Brigades: Securing Capitalism, Governing Fire

At the time of the Great Fire; 'there was no fire insurance' (Bell, 1923, 17). For Evans, it was only; 'After the Great Fire of London' (1987, 89) that 'the problem of security for possible fire victims was accentuated' (ibid). The Great Fire prompted the question of how fires should be protected against. In response to this question, I show in this section how protection was formalised and enacted in a decentralised manner, within society itself and beyond the authority of the sovereign.

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been caused by other than the Hand of God, a great wind and a very dry season' (2001, 323). In light of wider changes in London at the time, there is an acceptance here of the uncertain and accidental way in which fires might happen as the city grows and transforms in unregulated ways.

Evans states that the 'general development' (1987, 89) of fire insurance does not only find its impetus in the aftermath of the Great Fire. Instead, fire insurance developed alongside 'other forms of commercial enterprise and insurance contracts that took place' (1987, 88) at the time. Although its foundations can be found in the thirteenth century (See Lobo-Guerrero, 2011), different forms of insurance were becoming popular in London in the seventeenth century. The aim of insurance was the consolidation of nascent forms of liberal endeavour or in Lobo-Guerrero's terms the 'security of liberal life' (2008, 219). Below, I argue that the newly established fire insurance companies secured their own livelihoods through forming fire brigades, establishing fire mitigation strategies and making fire an object of actuarial knowledge.

Towards the end of the 1660s, petitions were presented to parliament to allow houses to be insured from fire. As with the Act of 1668, fire was understood in these petitions specifically by its potentiality. 'For a premium of Twelve pence per £20 rental value' (Evans, 1987, 88) then, 'an insured would have his house rebuilt in the case of fire' (ibid). It is in 1681, however, that the first premium designs are implemented in agreement with the regulations outlined by parliament[39]. Between 1681 and 1684, 4000 houses were insured (See Cockerell and Green, 1994).

Premiums were designed in accordance with information accrued from events such as the Great Fire which explained how fire had affected different building materials. A wooden house's 'premium was '5% of its rental value' (Carlson, 2005, 40) whilst the rate 'was 2% of the rental value for brick' (ibid). Establishing premium rates relied on knowledge and experience garnered from events like the Great Fire. The Great Fire was deemed to spread easily due to the amount of wooden houses in the city. Consequently, owners of wooden houses paid a higher premium. Through generating premiums, the first forms of knowledge assessing the possibility of fire became institutionalised and acted upon.

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[39] This precedent was set down by the City of London's agreement with *An enquiry, whether it be the interest of the city to insure houses from fire and whether the insured may expect any advantage thereby, more than from the Insurance-Office already settled* (1681).

Although fire was thought of by its potential, premiums were subject to change depending on how fires unfolded. Evans claims then that 'the fixing of premiums was a matter of trial and error' (1987, 89). Imprecise calculations led to capital loss for insurance companies. James notes that although 'houses had been insured for aggregate premiums of £18,000 ... more than £7,000 had been paid out in claims' (1954, 47) in the 1680s.

It is because of the failure of actuarial logic that organised fire brigades came into being. As I will show to be evident throughout the historical periods discussed, a reactive or ad hoc form of decision making shapes the development of fire governance here. Despite the efforts of the sovereign, Carlson states that the 'Lack of any organised fire fighting created a necessity for the insurance companies to employ a brigade *to minimise the losses of fire*' (Carlson, 2005, 40 my italics). Although premiums sought to gauge fire by its potential, it was in reaction to events as they occurred that fire brigades came into being. Early fire brigades were established not primarily to attend to the devastation that fire caused but from a failure in the design of insurance premiums and the subsequent profit losses sustained by insurers. The inability to accurately design insurance premiums meant that the first insurance brigades were formed specifically to minimise damage to property, to ease the financial extent of claims and to attract new business.

Reinforcing their formation to secure the future of insurance companies and attract new clientele, the most explicit reference to the brigades is in a Proposal by the Sun Fire Office in 1712.

> For the further encouragement of all Persons, there are actually employ'd in the
>
> Service of the Said Company, thirty lusty, able body'd Firemen, who are cloth'd
>
> in Blue Liveries, with Silver Badges, with the Sun-Mark upon their Arms, who will
>
> always be at Hand to assist in quenching Fire and Removing Goods, whenever any

one shall have the Misfortune to have his House on Fire; who have given Bonds to the

Company ... And that the Houses of those Persons insur'd may be known by the said

Fire men, the Mark of the Sun shall be fix'd upon their Houses gratis (1712, 1)

Should a fire break out insurance brigades would be able to identify if the property was insured by the existence of a plaque. Some literature suggests that a brigade would only attend to a fire should their particular plaque be identified (Dolan, 2001). Carlson claims, however, that 'Insurance brigades were in the practice of providing services to all who were in need, irrespective of insurance' (2005, 40). This claim is seconded by Milne (1986), who states that early brigades would attend fires at uninsured properties in order to promote the reputation of insurance companies.

The primary goal of early fire brigades was to secure a fire insurance industry in its infancy. However, the response of fire brigades to anyone in need suggests that the operation of fire brigades was also deemed a public good. The actions of the fire brigades, instigated out of private interest but also understood by some as serving a public good, acts to trouble the distinction Ewald (2002) makes between insurance as contributing to a diffusion of responsibility and the structuring of insurance by solidarity. The rise of the insurance brigades, at least for the minority that took out insurance, does suggest the instilling of responsibility in citizens. For Ewald, the responsibility to take insurance is 'linked to the advent of liberalism' (2002, 275) and involved 'making people provident, aware of the future, and preventing them from living solely in the present' (ibid).

In no way, however, was this practice of responsibility found throughout the population. Instead, the insurance brigades became understood by the populous as a service for all. This is because the brigades adopted a paradigm of responsibility upon themselves in providing a response to fire for everyone, whether insured or not. Fire brigades became perceived as a public good as a result of blurring the

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emergent ethic of responsibility with the solidarity that Ewald attributed to the function of insurance in the twentieth century.

Out of a burgeoning insurance industry and in reaction to the Great Fire of London, fire brigades gradually formed. From their inception, brigades were arranged and managed from disparate sites across society. Brigades were established initially to stop the profit losses of fire insurance companies. However, fire brigades were soon perceived as performing a public good as well. It is with reference to this contested perception of their function, as a private enterprise at the same time as a public good, that I discuss the development of fire brigades in the next section.

2.4 A Public Good and a Private Enterprise: The National Extension and Gradual Re-situating of Fire Brigades

I have argued that the perceived function of fire brigades was contested, split between the insurance companies and the populace. The existence of fire brigades was a public good due to their response at incidents whether or not the site was insured. Carlson's (2005) research shows, however, that fire brigades were first formed to ensure the profits of insurance companies. Throughout the eighteenth century, this tension between fire brigades being a public good at the same time as serving private ends developed with important shifts in the institutional sites which had a hand in coordinating fire brigades. With shifts in the arrangement of fire brigades, new forms of knowledge came to articulate fire as an event and new strategies by which to attend to fire were formulated.

By 1725, London's fire insurance companies were 'most willing to make contributions' (Wright, 2008, 27) of fire fighting equipment to different volunteers in the city. Amongst equipment distributed were 'buckets, fire hooks, lengths of hose and even sometimes fire engines' (ibid). This move by the insurance companies was consistent with the conventions of brigades in the late seventeenth century. On one hand, fire fighting would be undertaken at uninsured sites and deemed to reflect well on brigades

themselves. On the other hand, however, this philanthropy had an alternate purpose which reiterates the brigades' private ownership. Although reinforcing the perception of fire brigades as a public good, provisions were made also due to how fire incidents themselves were understood to develop. As had been the case since the Great Fire, fire incidents were understood by their spread. The consequence and extent of fire was determined by the fire's location and proximity to buildings, the material of the surrounding built environment and the various 'combustible' goods stored in buildings. Providing volunteers with equipment meant that fires would be less likely to spread to insured houses. In line with this circulatory perception of fire, the distribution of equipment to volunteers appears equally as prudential as it is philanthropic. The distribution of equipment throughout the city satisfies the two parallel functions that fire brigades were deemed to serve; as a public good but also as a private enterprise.

Along with the expanse of volunteer and insurance subsidised fire fighting, the 1730s witnessed premium design growing complex. Premiums became organised around the notion of fire hazard. Common insurance premiums would be offered to those inhabiting houses made of stone with slate roofs. 'Hazard insurances' (1757, 1) were offered to those whose houses were 'Timber or Plaister Buildings' (ibid) and whose 'Goods and Merchandize, therein (are) not Hazardous (ibid, my brackets). Lastly, 'Double Hazardous Insurances' (ibid) insured 'Thatch'd Buildings (ibid) 'wherein Hazardous Goods or Trades are deposited or carry'd on' (ibid)[40]. Two population variables were used to establish fire hazard. Firstly, the occupation of the insured was taken into account to gauge their everyday usage of, and exposure to, fire. Secondly, the material of the building in which occupations were undertaken was factored in. Both these variables meant that premiums were sold through an aggregated understanding

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[40] The following information was found in premium registers: policy number, name of agent/location of agency; name, status, occupation and address of policy holder; names, occupations and addresses of tenants (where relevant); location, type, nature of construction and value of property insured; premium; renewal date; (See Cockerell and Green, 1994).

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of fire's possibility. Hazard, in Ewald's terms, introduced 'a schema of rationality, a way of breaking down, rearranging and ordering certain elements of reality' (1991, 199) which allowed the establishment of standardised fire insurance. With the introduction of premiums based on hazard, fire insurance was further consolidated by more nuanced calculations of fire's possibility in the future.

The 1750s was characterised by further developments in the use of knowledge on fires, particularly within the brigades themselves. A reciprocal link was established between insurance companies and brigades to serve the dual purpose of fire mitigation and the management of premiums. To aid fire fighting 'company brigades were probably given lists and reports on the water situation in their area of operation together with the location of fire plugs' (Wright, 2008, 149). The information distributed to brigades enabled preparedness for the eventuality of fire because it documented where resources could be found in anticipation of the next fire. However, information also served to enable the management of premiums. To this end, the brigade chief would report to the insurance company, offering a retrospective account of incidents. The reports described how the fire developed, outlined the causes of the fire and assessed damage to the property to release appropriate payments. The reports would also state whether the fire was started by accident or on purpose (Wright, 2008).

Although insurance brigades were responsible for most of the developments in fire governance, action was also taken by the government in line with the hazard ratings established through premiums. Government action was evident in the establishment of the *Fire Prevention Act* of 1774 (1774). This Act sought to regulate the materials used in building construction, the size of buildings and area density to stop the spread of fire. Applying to 'anywhere within the cities of London and Westminster' (1774, 1), the Act categorised buildings in seven classes according to the required thickness of external and party

walls[41]. Building on the hazard ratings through which fire was known, class one included 'every house or building for distilling and brewing liquors (1774, 2) and any property which 'shall be the height of thirty one feet from the surface of the pavement' (ibid). Buildings in class seven included 'every cranehouse... or any wharf or quay, and every shamble, windmill or watermill' (1774, 10). Up to this point, fire had been accepted as an inevitable hazard of daily life. Although fires remained inevitable, the *Fire Prevention Act* sought to regulate the built environment in a way that could stop fires before they occurred.

Fire governance 'remained a classic moulding of public and private responsibilities' (Ewen, 2010, 12) from the time of the *Fire Prevention Act* up until the mid 19th century. Along with 'joint stock water companies, turnpike trusts (and) street cleaning' (ibid, my brackets), strategy for fire fighting was co-ordinated between entrepreneurial businesses and government. The time between the *Fire Prevention Act* and the early years of the nineteenth century is vital for tracking the expansion of fire brigades throughout the whole of Britain. In terms of how fire brigades were arranged between different sites, the need for 'a joined up approach towards fire fighting' (Ewen, 2010, 16) between public and private institutions was recognised as the 'growing number of large industrial fires was unprecedented' (ibid) throughout Britain.

In rapidly industrialising cities, examples of how fire brigades were formed through negotiations between insurance companies and civic authorities were evident. For Wright, the establishment of fire brigades in Sheffield was of interest due to the multiple and disparate sites which worked to supply resources:

> The parish engine and volunteer brigade at Sheffield were partly funded by the Phoenix

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[41] The classes worked as a scale to indicate the exposure of buildings to fires. Class one was the most exposed and class seven the least.

Assurance Company from 1800, but by 1805 the town council were sufficiently worried

about its running costs to ask Phoenix not only to continue its support for maintaining the

service but also pay the wages of the men... the town council presented its engines to the

Directors of the Birmingham Fire Office, who undertook to keep them in good repair and supply

men to work them. In return the council agreed to try and encourage the inhabitants of Sheffield

to insure with that company. (Wright, 2008, 29)

The notion that fire brigades were a public good pursued for private ends extended across Britain. As

the above example of fire brigade formation in Sheffield shows, the relation between public and private

sectors bolstered the insurance business whilst also securing urban space. Fire brigades' expansion

across Britain and the ability of insurance companies to distribute resources may have been the result of

the further standardisation of insurance tables at the time. Information, such as the gradations of

hazard for premiums described above, was shared amongst insurance companies which allowed 'a more

or less common tariff for fire insurance' (Wright, 2008, 26) for different types of buildings to be set.

Alongside this standardisation of fire insurance, the early 1800's saw the further enhancement of fire

brigade strategy. The *Fire Prevention Act* indicates that prevention was enacted from central

government. Fire brigades themselves continued to focus on response. Within the domain of response,

strategy focused on mobilisation in attending to fires as and when they occurred. Spatial divisions were

drawn to better respond to fire. Along with maps of the locations of resources, engines were kept 'at

strategic points to give as full cover as possible' (Wright, 2008, 113). Fire fighters were also allocated an

'area of operation' (Wright, 2008, 116). These areas of operation dictated the space in which specific fire

fighters would respond should a fire occur. In addition, these areas of operation would be patrolled by

fire fighters. Whereas establishing areas of operation meant engines would be spread equally across

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space, the introduction of patrol meant that fire brigades worked increasingly to anticipate fire and ensure response should a fire occur.

These strategic developments did not stem the frequency of fires. Indeed, it was a string of major fires in Edinburgh throughout 1824 that radically changed how brigades used knowledge, the organisational arrangement of fire brigades and strategies for dealing with fires. Two large fires happened in the city in April and June of 1824. The most significant in terms of re-problematising fire and fire brigade operation, however, occurred in November 1824. Lasting over two days and containing three simultaneous outbreaks of fire, what became known as the Great Fire of Edinburgh damaged much of the city centre. Much like the description of the fire in 1666, the fire in Edinburgh was understood by its spread, being articulated in connection with the circulatory pathways running through the city. The fire spread by: 'four blocks of tenements...along the High Street; two wooden blocks by Conn's Close; four blocks... in the Old Assembly Close... four blocks of six storeys in the Old Fishmarket... and four double blocks...on Parliament Square' (Ewen, 2010, 33).

There was a reaction from both insurance companies and civic authorities in assessing the consequence of the fire. The secretary of the Scottish Union Insurance Company[42] understood the fire according to the hazard categories I discussed above: 'Some of the buildings are occupied as dwelling houses, some as taverns, some as printers' workshops, others by pawnbrokers or by persons carrying on business- some hazardous, others doubly hazardous' (Ewen, 2010, 34). This reaction was accompanied by establishing a local authority committee to assess the performance of fire brigades responding to the fire. The main conclusions of the committee was 'a total want of organisation and unity of action... the deficiency of Fire Engines... the bad condition of their apparatus and insufficiency of mutual assistance for a protracted fire' (Ewen, 2010, 33) had been at fault for the damage the fire caused. The fragmented

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[42] The Secretary of the Scottish Union Company at the time was Frederick Smith (See Ewen, 2010).

and unorganised approach to tackling the fire was the result of multiple insurance brigades acting with different interests. Each insurance company's brigade gave priority to saving specific buildings under their insurance.

As with the establishment of insurance brigades, a form of decision making which reacts to events after they have occurred guided the development of fire brigades and fire governance in the aftermath of the Great Fire of Edinburgh. The conclusions of the committee prompted a major institutional shift for Edinburgh fire brigades. Although still subsidised by the insurance companies, brigades were amalgamated to form the Edinburgh Fire Engine Establishment (EFEE) and placed under the control of local government. Overall command was granted to James Braidwood.

Braidwood set out to rationalise fire brigade operation outside of the profiteering motives of insurance companies. He was instructed to report on the condition of fire engines and equipment, to make recommendations on the location of engine houses and the number of personnel to be allocated for each engine. From the time of his appointment, Braidwood kept a log book 'in which he meticulously recorded every fire call attended by his fire men' (Ewen, 2010, 44). Rather than being used to adjudicate premium claims, Braidwood recorded incidents to improve strategy for future outbreaks of fire according to previous incidents.

Perhaps most tellingly in terms of a new focus on using information to prepare for fires is the introduction of training by Braidwood. Fire fighters were drilled every Wednesday at four o'clock in the morning. Explaining the rationale behind drills and the time at which training was carried out reveals how strategy was adapted to the variables identified about the occurrence of fire. As Braidwood remarks then,

> The mornings... at this early hour, are dark for more than half the year, and the fire men

are thus accustomed to work by torchlight, and sometimes without light whatever... And,

as most fires happen at night, the advantage of drilling in the dark must be sufficiently obvious.

(Braidwood, 1866, 100)

Training was structured for the first time by fire trends. Understanding fire incidence through the 'stable relative frequencies' (Hacking, 1975, 1) of trends shows how strategy was assimilated to a new rendition of fire. Trends relating to the time at which fires most commonly took place were used by Braidwood to understand the probability of fire. Aligning strategy to a future understood through trends: 'Braidwood was able to claim that engines, complete with three lengths of coupled hose, could be ran out (ready for use) by his men in one minute and ten seconds' (Wright, 2008, 164, my brackets). Braidwood used information from past occurrences of fire to ensure a quick mobilisation to fires as and when they occurred.

The success of the EFEE under Braidwood influenced changes to fire brigade strategy in London. In 1831, proposals were drawn up 'for improving and making more effective the Fire Engine Establishments of the London Fire Offices, with the view of bringing them under one Management' (Wright, 2008, 165). This plan saw the amalgamation of the insurance brigades and the forming of the London Fire Engine Establishment (LFEE). Although private insurance companies retained their control, any notion that the brigades would only attend to fires of those insured were dispelled in an announcement that the LFEE was: 'prepared to give the most prompt assistance on all occasions of fire' (Wright, 2008, 166). In 1832, Braidwood was appointed as Chief of the LFEE.

One of Braidwood's first acts was to enhance the experiential knowledge of fire fighters. 'Every fireman' (Ewen, 2010, 167) 'was required to get to know his district by walking around it to become familiar with the location of water supplies and those buildings which presented a particular risk' (ibid). Fire fighting

thus became more knowledge based and sensitive to the unique character of different fires. Although fires were to be known by their potential, Braidwood also made provisions for quick mobilisation to fires as they occurred. Ewen states that the 'LFEE had a continuous duty system where two men were put on a two-four hour watch while the rest of the men were on standby' (ibid). In adapting to the continuous possibility of fire, vigilance was increased. Although knowledge was harnessed to understand fire by its probability, there was still an underlying acceptance that fire outbreak was inevitable and that fire brigades must be organised around the need to respond as and when fire incidents occurred.

Soon after Braidwood was appointed, there was a large fire in the Houses of Parliament. In his report on the fire, Braidwood reveals the extent to which fire was understood as a multi-variant phenomenon in both its causes and ability to spread:

The cause of the fire proceeding so rapidly in the work of destruction I believe to be as follows:

1. The total want of party walls

2. The passages which intersected the building in every direction, and acted as funnels to convey the fire

3. The repeated alterations in the buildings which had been made with more regard to expediency than security

4. The immense quality of timber used in the interior

5. The great depth and extent of the buildings

6. A smart breeze of wind

7. An indifferent supply of water which, though amply sufficient for any ordinary occasion, was inadequate for such an immense conflagration (Wright, 2008, 169)

The information produced by Braidwood was used to highlight the lack of resources at the LFEE's disposal. In his annual report for 1842, Braidwood claimed that 'despite being called out to 213 more

fires than the previous 9 years' (Ewen, 2010, 54) there was no increase in recruitment or water supply. As such, Braidwood utilised statistics not just to generate knowledge on the possibility of fire but also to assess the brigade's capacity to attend to future fires.

The information presented by Braidwood after the fire at the Houses of Parliament lead to a reappraisal of the private ownership of fire brigades. The complicated problem of fire brigades being perceived as a public good but privately financed was apparent in a letter sent by the LFEE to the Prime Minister in the aftermath of the fire at the Houses of Parliament.

> Although always ready and anxious to afford all the assistance in their power upon every
>
> occasion of fire... (brigades) are nevertheless private establishments... They still form the
>
> main security against the spread of fires; but where their service might require to be absorbed
>
> in the protection of the peculiar interest of the insurance companies, the uninsured portion
>
> of the public and Government works must be left to the care of the public'.
>
> (Wright, 2008, 171, my brackets)

Regardless of this warning, the next two decades saw no central government intervention against the continuing possibility of fire. This was the case even though the regulations of the *Fire Prevention Act* of 1774 were being continuously undercut as industrial and mercantile activity accelerated in London. Wright notes that although 'three to five storey warehouses were constructed of brick, they had been built at different times with lots of additions' (2008, 173). The needs of a burgeoning economy literally broke through the building regulations in place.

The next major fire in London was caused and spread precisely due to the surpassing of the *Fire Prevention Act*. In 1861, fire spread through Tooley Street where illegal warehouses had been

constructed. Igniting initially in jute and hemp storage warehouses, the fire spread through many

buildings and wharfs. Judged by Braidwood as impossible to fully extinguish, the fire raged for two days

and only stopped completely twelve days later, damaging eleven acres of land. In fighting the fire,

Braidwood died[43].

On recording the damage, insurance companies were forced to pay out around two million pounds.

Although the claims were paid, premiums were raised by between fifty and one hundred percent after

the fire (Blackstone, 1957). For the first time since the fire brigades were formed, insurance companies

began to make significant losses. In 1862, a select committee was founded to understand why 'a body of

men...so devoted to public service...should be paid and supported, not...by the Government for the

good of the State, which it undoubtedly is, but by the combined efforts, the wealth and the public spirit

of the private companies' (Blackstone, 1957, 52). The select committee formed to discuss, and come to

a decision regarding, how to situate fire brigades between public and private sectors.

The committee found complete inactivity on behalf of the government since the *Fire Prevention Act* of

1774. It was decided that the LFEE should be situated under local government control. This transferral of

fire brigades into the public sector in London was established in the *Metropolitan Fire Brigade Act* (1865)

of 1865. The Act itself states that 'Fires and protecting Life and Property in case of Fire shall within the

Metropolis be deemed for the Purposes of this Act to be entrusted to the Metropolitan Boards of

Works[44] [45]'(1865, 818). Along with the re-positioning of fire brigades, the Act implemented a

concomitant shift in what fire brigades attended to. As the quote above documents, the Metropolitan

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[43] See The Times, *The Great Fire* (1861).
[44] Between 1855 and 1889, the Metropolitan Board of Works oversaw the delivery of improved infrastructure to cope with London's rising population (See Owen, 1982).
[45] Although overall authority for fire fighting was transferred to public authorities, the insurance companies would still have to subsidise fire brigades to the amount of £35 for every million pounds accrued in claims. The Metropolitan Board of Works limited its subsidies for fire fighting to £10,000 annually.

Board of Works was entrusted to protect life from fire. Accompanying the insurance companies' concern with buildings, then, human life became a primary reference point organising fire brigade strategy.

With the aim of governing human life, fire brigades extended their use of statistics. Under the leadership of new Fire Chief Shaw, fire was accounted for in relation to new variables. Building on Braidwood's work, fire was addressed by its temporality in terms of monthly rates and trends of fire by each hour of the day. The occupation of those who had been victim to fire was highlighted, showing how beer shop keepers and victuallers were amongst those who experience fires the most. Furthermore, both the cause and extent of fire damage was quantified in Shaw's tabulations. Averages were thus worked out statistically for how many properties were seriously damaged and those whose damage was 'slight' (1870, 1). By 1880, human life was a thoroughly embedded factor through which to understand the risk of fire:

> The number of persons seriously endangered by Fire has been 160, of whom 127
>
> were saved, and 33 lost their lives. Of the 33 lost, 14 were taken out alive, but
>
> died afterwards in hospitals or elsewhere, and 19 were suffocated or burned to death
>
> (Shaw, 1880, 4)

With the full transition of fire brigades from the ownership of insurance companies and their profit oriented interests to public authority ownership and their goals of responding to the disturbance fire caused to populations, the epistemic parameters through which fire was understood were expanded. With the generation of detailed statistics, fire was increasingly thought of, as Hacking (1990) would state, in terms of its probability. The life of subjects became a key reference point for understanding fire at the *fin-de-siècle*. The emergent category of human life intersected with other variables referred to above and meant that fire was conceptualised as a multi-variant phenomenon. In terms of method, fire

continued to be known through trend identification but also through correlations between fire

occurrence and specific categories such as deaths, occupations and the time at which fires occurred.

This quantification of fire was actioned through aligning statistics to decision making on what resources

might be needed. The strategic purpose of statistics was not to facilitate intervention in anticipation of

fire's occurrence however. Instead, the purpose was to make fire's statistical expression central to the

operation of the brigade in adapting to the risk presented. 'By incorporating statistical tables' (2010, 97)

as Ewen notes 'which reported the number of fires, their causes and locations, the time and season in

which they occurred ... chief fire officers directed the deployment of resources' (ibid). Through the

statistics generated, decision making sought to enhance decision making on how to respond as and

when fire's occurred.

Coming to the turn of the twentieth century, fire brigades had become a public service throughout

Britain (Wright, 2008). Much of the genealogy I have offered above of the brigades is conditioned by the

complexity of fire fighting being understood as a public good but one under private ownership. In terms

of its organisational arrangement, brigades had broken away from the actuarial, profiteering goals of

insurance companies by the end of the nineteenth century. At the same time as the insurance brigades

were extending across the country, the extent and regularity of the incidence of fire was increasing as

Britain became heavily industrialised and urbanised as shown in the cases of Tooley Street and

Edinburgh. The transformation of the brigades into publically managed organisations was certainly

influenced by the need to respond to fires in a new way. The growth of cities and the breaking away

from sovereign modes of power, as shown literally in the undercutting of the *Fire Prevention Act* which

brought about the Tooley Street Fire, called for a new form of management of society. Enacting a new

form of governance, fire brigades did not pre-determine control through the establishment of laws from

a central government position. Instead, fire brigades were controlled at the level of local authorities

disparately spread across the country.

With the move of fire brigades into the public domain, I have outlined important developments in how

fire was understood and known in terms of its relation to populations. In line with how fire became

conceptualised, brigades formulated new strategies and decided what resources were needed for fire's

mitigation. In the time of the insurance brigades, understanding the causality of fire was confined to the

domain of premium management. The notions of hazardous and doubly hazardous gave different

conceptions of the fire's potential in the future according to trades and building types. It was with

Braidwood and Shaw and the resituating of brigades into the public sector that new statistical analysis

sought to grasp the probability of fire. The data used, moreover, expanded to address fire as an event in

relation to human life. In turn, new strategic developments were evident such as training which was

tailored to fire trends and enhanced forms of mobilisation to respond as and when fires occurred.

2.5 Fire in War: Precaution, Incendiary Bombing and the National Fire Service

The chapter now turns to consider the problematisation of fire and fire governance in the build up to,

and during, air raid attacks over Britain in the Second World War. Specifically, I examine the

precautionary measures under which fire brigades operated at this time. In this period, closer relations

between central government and fire brigades were evident along with the insertion of new strategies

by which to govern the redefined risk of fire in war time.

By the mid 1930's, the British government was increasingly aware that war in the future would partly

take place through air raids on British cities. Past events sustained these speculations. The First World

War had witnessed the bombing of East London in 1917 which resulted in 160 deaths and around 400

injuries (Leete, 2008). More pertinent, however, was Germany's contribution to the Spanish Civil War

and their attacks on Barcelona and Guernica. The latter was hit by '25 tons of bombs' (McCutcheon, 2007, i) and mostly destroyed.

In the mid 1930's, the British government began to take new pre-cautionary measures to act against the unknown but potentially catastrophic threat of air raids. I understand precaution as being comprised of two practices. Firstly, a pre-cautionary logic underpins the analysis of fire's possibility. Because of the uncertainty of the threat, I define precautionary analysis by its ability to go 'beyond the traditional, quantitative mechanisms of calculating' (Aradau and Van Munster, 2008, 5). Rather than being undertaken within brigades, the analysis which informed strategy showed the influence of central government on brigades at the time. The Air Raid Precautions (ARP) committee, the Civil Defence Authority and the Home Office took control in estimating the potential damage air raids might cause in war time and made provisions for brigades.

Secondly, pre-caution was evident in the development of new strategic techniques to deal with the threat of bombing. New strategy was evident, for instance, in the development of new mutual assistance frameworks between fire brigades and the production of air raid precaution schemes. As I will document, I draw on the notion of precaution also, however, to explain how strategies for response might actually obstruct the ability to secure if the projection of events does not connect with how such events come to unfold (Ericson, 2006).

One reason why fire brigades did not undertake analysis themselves was due to the possibilities of fire being entirely different to how fire had been understood in earlier historical periods. Fire as an event was reconceptualised with air raids because of the existence of incendiary bombs. The main effect of incendiary bombs was not explosions but the ability to cause damage through fire. The potential consequence of a fire caused through incendiary bombing, then, was understood to exceed fire's consequence in peace time. As noted with Braidwood and later Shaw, fire had become an event which

could be understood in terms of probability according to spatial, temporal and demographic categories.

Fires from incendiary bombing, however, could not be known through such categories. Both the

likelihood and consequences of fire through incendiary bombing were recognised as uncertain. Fire was

understood and projected more as a 'known unknown' (Amoore, 2009a, 18) as in the terms applied to

terrorist threats in contemporary debates. The possibility that incendiary bombs would be dropped was

accepted throughout government. However, the frequency of its usage and the damage it may cause

was relatively unknown.

To counter the uncertainty which surrounded it, new forms of analysis intervened to capture fire as an

event redefined under a catastrophic rubric. The ARP committee undertook hypothetical analysis of

incendiary bombing and released its estimations in 1936. The committee's report started with the

caveat that: 'In the complete absence of experimental results it is necessary to fall back on either on

theoretical calculations or on the tables published in the handbooks of several European Governments'

(1936, 11). Hypothetical analysis informed government in 'the presence of a risk that is neither

measurable nor assessable' (Ewald, 2002, 286) and necessarily drew on calculative techniques not

usually associated with analysing fire. As will be sustained in the case of how air raids actually occurred,

analysis driven by a precautionary logic is prone also to over-estimation and the presentation of futures

through 'worst-case narratives' (de Goede, 2008, 156).

A specific formula for undertaking these precautionary, hypothetical analyses was used by the ARP.

Hypothesis departs from those analytic techniques found in earlier historical periods as it largely does

not substantiate its predictions by past incidents. Instead, hypothesis operated by an intermixture of

speculation and knowledge on the built environment. It was estimated that a 'large bomber' (1938, 1)

would be able to carry between '1000 and 2000 small incendiary bombs' (ibid). The analysis divided

Britain based on the ratio of open space against built up areas which was 'taken to be of the order of

five to one' (1938, 4) respectively. From this ratio, estimations were furthered that 'for every six bombs dropped, one might be expected to hit a building' (1938, 1).

Another report from the ARP uses these estimations to assess the potential damage to Britain's urban spaces that incendiary bombing might cause. Impact was gauged by assuming the angle at which the bomb would make contact with a building and the bomb's 'velocity at its arrival' (1937, 9). The angle at which the bomb might make contact with a building was dependent on the speed and height of the bomber. The report continues to state that: 'Over defended towns it may be expected that bombing will be carried out from greater heights' (1937, 9), as such, 'the angle will be between 15 deg. and 20 deg. from any of the greater heights' (ibid). Consequently, the probability that bombs which hit buildings will also penetrate their interior increased because the bombs will hit the side of buildings rather than the roof.

The ARP sought to assess the damage incendiary bombing would do to infrastructure. As the report states 'chief damage done (by incendiary bombs)... is done to pipes and wires' (1937, 17). This focus on infrastructure informs Ewen's commentary on how provisions were made by the fire brigade in Birmingham 'on the assumption that roughly 1000 simultaneous fires would be started in the city from air raid attacks. With the consequent effects of disrupted water mains, blocked roads, broken communications, damaged fire stations and appliances' (2010, 137). With regard to the effect that incendiary bombing might have on fire brigade response, Ewen continues to state that 'water mains might be damaged... with the result that there might not be enough water... for a fire engine to use' (ibid) alternately 'roads might be damaged by high explosive bombs and so prevent a fire engine from reaching a site on fire' (ibid).

The potential damage that bombs might cause was also understood in terms of human life. The impact of bombs hitting the side of a building were estimated to have the potential of 'killing passers-by or

people indoors (1937, 17). Using data acquired from air-raids in Barcelona; 'The effect' (1937, 19) of incendiary bombs on 5-7 storey buildings 'in terms of material damage and loss of human life is, from the point of view of the attackers, 100 percent' (1937, 19). Analysis which is enveloped within a pre-cautionary imagination operates on the basis that potential catastrophes that are uncertain are best articulated at the extreme limit of their disastrous potential. Embodying this projection of the worst case scenario, Leete's research shows that the ARP committee disseminated information to other government departments stating that a single 'air attack on London could result in over 1,500 people being killed and over 3,000 wounded' (2008, 5).

On the basis of the analysis undertaken by the ARP, Britain was divided into different areas according to potential risk from attack. The country was divided into three different groups. Risk group A accounted for areas populated by warehouses, factories, docks and railway depots. Risk group B included areas where garages were found along with warehouses of no more than three storeys. Risk group C referred to places populated by residential properties (Leete, 2008 Ewen, 2006, Wallington, 1982).

Precautionary analyses and the resultant risk gradations engendered new strategic measures for the mitigation of fire. However, fire brigades themselves did not have control over decision making about how to implement these measures. The lack of control fire brigades had in enacting precaution again revolves around the catastrophic potentiality fire attained in war time. As Leete notes, 'fire risks in war time presented a problem of such alarming proportions that the peacetime conception of adequate protection was not in the same realm of discussion' (2008, 14). Taking precaution against a future that was unknown but deemed catastrophic facilitated the influence of central government over fire brigades.

Provisions for fire brigades enacting precaution against incendiary bombing were made primarily by the Home Office. The control the Home Office exerted over fire brigades was sanctioned by two pieces of

overlapping legislation: the *Air Raid Precautions Act* (1937) and the *Fire Brigades Act* (1938). The *Air Raid Precautions Act* contains precedents which applied both generally to the population and specifically to fire brigades[46]. Under the Act, local authorities were required to produce air raid precaution schemes. The guidelines produced show that the overall content of these schemes was controlled by central government. Referring to Hurbert Morrison, Home Office Secretary, all schemes 'will be in accordance with the plans, estimates and other particulars to be approved by him' (1938, 1). Applying generally to the public and organisations other than the fire brigade, the schemes would enact precaution through building air raid shelters, communication technologies and decontamination services.

The *Air Raid Precautions Act* also instigated strategic reform for fire brigades specifically. With analysis which envisaged the worst case scenario, the Act sought to ensure that 'the proposed cover was adequate' (Hollis, 1985, 8) for dealing with the attacks. The Act required that air raid precaution schemes established 'fire beats' (1938, 9) identifying patrol areas for air raid wardens to alarm the brigade at the sight of German bombers. The Act also increased personnel though 'the provision and siting of auxiliary fire stations' (Hollis, 1985, 8) and the 'training and recruitment of auxiliaries' (ibid) to form the Auxiliary Fire Service (AFS). Consisting of volunteers, the AFS received training in fire precautions from full time members of brigades and would be called to duty when attacks took place. The introduction of the AFS increased 'the numerical strength of professional fire brigades tenfold' (Ewen, 2010, 127). By 1939, nine-hundred[47] air raid precaution schemes had been received by the Home Office. Fire brigade provisions accumulated to around '120,000 men, and 4350 pumps, plus 470 miles of hose' (Hollis, 1985, 9) at this point.

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[46] As a move in which Rose (1990) sees the instilling of self-governance within the population, there was a concerted effort in this Act to diffuse the obligation of precaution within citizen's daily lives. Subsequent to the *Air Raid Precautions Act*, handbooks on, for instance, personal protection against gas to incendiary bombs and fire precautions were distributed throughout the population.

[47] Although 900 schemes had been received, there were 1,400 local authorities (See Hollis, 1985).

The control exerted over fire brigades by the Home Office was reinforced in the *Fire Brigades Act* (1938).

Although retaining local control, the Act handed more power to central government over brigades. As

Ewen notes then, the Act would ensure that 'fire fighting essentially remained a local service, albeit

subject to national regulatory controls' (2010, 128).The strategies for dealing with incendiary bombing,

however, were drawn out by central government and formulated in alignment with precautionary

analyses.

The Home Office attempted to remove 'the assumption that large numbers of fires would not occur at

the same time' (2010, 8). This is an assumption, according to Beckett, 'upon which the fire service was

based' (2010, 8). Beckett continues, stating that; 'such an assumption was reasonable enough in

peacetime but clearly wrong for the sort of war that was likely to be fought' (ibid). With this re-

conceptualisation of fire, the *Fire Brigades Act* divided Britain into twelve regions. Under the overall

authority of a National Chief Fire Officer, twelve Regional Chief Fire Officers were installed. The role of

the Regional Chief Fire Officer was to ensure that 'engines, appliances and equipment' (Bevir, 1938, 1)

were supplied to each region.

Fire brigades' control under the precautionary measures of the central government also meant the

standardisation of information collection. The standardisation of information collection was facilitated

by the fact that all analysis derived from central government bodies. As a set of heterogeneous agents

scattered across the country attending to fire in its everyday, peace time incarnation, local statistics on

individual spaces and the experiential knowledge of fire fighters would suffice. However, with

knowledge on the threat of imminent bombing and estimations of its consequence only being generated

by the Home Office, homogeneous procedures of information collection were required.

Being 'understood as integral to matters of national defence' (Bevir, 1938, 11), all brigades were to

generate data about local areas. Including:

'obtaining by inspection... information about:-

(i)   The character of buildings and other property;

(ii)   The available water supplies;

(iii)   The means of access to such waters and

(iv)   Other material local circumstances (1938, p2)

As with ARP estimations, taking precaution revolved specifically around the impact incendiary bombs would have on infrastructure and the availability of resources to respond to bombing. Along with the standardisation of what data to collect, the *Fire Brigades Act* also based response on risk gradations similar to those established by the ARP committee. Preparing resources ready to respond should take one minute for 'important industrial areas' (ibid) four minutes 'in residential townships' (ibid) and six minutes 'in rural areas' (ibid). Lastly, the Act set important precedents for situations where fires were beyond the capacities of regional brigades by themselves. The Act required 'mutual assistance' (1938, 6) frameworks to be established between brigades in responding to 'exceptional fires' (ibid). These mutual assistance frameworks outlined how regional fire brigades would collaborate in the event of an extremely severe fire.

From the perspective of enacting precaution to air raids, the aftermath of the declaration of war was described as 'phoney' (Wallington, 1981, 2) because during 1939 no air raids occurred. The precautionary logics which structured estimations were contradicted when the future projected began to unfold. Extending the size and reforming the strategy of fire brigades seemed unjustified at the beginning of the war. Overall, the Home Office and the ARP committee 'were led into over-estimating the material impact of German attacks' (Harrison, 1976, 32).

Although no air raids happened, 1939 and early 1940 saw the development of further precautionary measures. The training and drilling of newly recruited and pre-existing personnel was given priority.

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Memorandum Number Nine from Air Raid Precautions Committee was 'drawn up to help local

authorities in working out the systematic and progressive training' (1939, 1) of fire brigade personnel.

Training was arranged in three stages: individual and collective training and combined exercises.

Individual training concentrated on developing a theoretical understanding of the bomb threat.

Instruction manuals were issued, outlining how to respond to incendiary bombing. In turn, collective

training focused on enhancing co-ordination between fire fighters.

Combined exercises tested the strategies developed in individual and collective training. The exercises

required first a 'story of events which are assumed to have occurred' (1939, 4). In advising how this

hypothetical situation should develop, suggestions were made which reflect the fact that, although

strategy sought to take pre-caution against the future, the mitigation of events was still grounded in the

capacity of fire fighters to react to events unfolding in the present. The Memorandum states that the

'time and method should be carefully considered, in order to avoid, as far as possible, disclosure of

information about enemy action which in war time could not be known until an attack took place' (ibid).

The hypothetical situations performed in exercises reinforced the uncertainty which surrounded

incendiary bombing. Emphasis was thus placed on fire fighter capacity to respond to bombing as and

when it occurred rather than seeking to pre-empt the damage bombing may cause.

Hollis provides empirical examples of how these exercises were undertaken at brigade stations during

the phoney war. Disastrous scenarios were imagined in line with the Home Office's understanding of the

bomb threat. Hollis describes how 'practice fires, such as trays of burning oil, could be provided for the

firemen to attach (to the exercise site) and smoke chambers built to give some idea of the perils of

entering this particular atmosphere' (1985, 16, my brackets). It is worth quoting Hollis at length here to

properly outline the staged development of exercises used in establishing precaution against incendiary

bombs. One drill started with,

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a pump and crew to stand behind a line and with the start signal to unhitch the

pumps from a towing vehicle, move it six yards forward and put the steadying legs

down. Two of the crew then ran 130 yards to a shed where they had to rescue a ten

stone dummy using the fireman's lift... whilst this was going on the driver unshipped

the suction hose and dropped it into a damn, started the pump and waited for the two

other men to run out and couple up four lengths of hose (Hollis, 1985, 83)

Fire was necessarily rearticulated by its uncertainty and catastrophic potential in war time. New forms of hypothetical analyses were relied upon due to fire's surpassing of the conventional statistical calculations through which it had been known in the time of Braidwood or Shaw. Both in terms of the knowledge used to understand fires and the strategy developed to attend to fire's possibility, precautionary measures rose to prominence in rationalising the operation of fire brigades. In doing so, a new understanding of the future came to inform the governance of fire risk. Fire fighting efforts were underpinned not by attending to a future expressed through trends built up through the past but solely concerned with countering contingencies that had never been experienced before. The future became the object that was governed in a novel way through precaution. Governance was practiced, then, in the present to address a future understood by its most extreme possibility. The projection of the future facilitated shifts in how fire brigades were arranged in relation to the wider governmental apparatus. With fire rearticulated in war time, central government took partial control over fire brigades for the first time. Moreover, new tactics of response were formulated such as mutual assistance arrangements between brigades.

I will now argue that the precautionary measures put in place led to brigade failures when air raid attacks did occur. Although the future was more directly attended to through what I have referred to as

precautionary analysis and strategy, the institutional shifts witnessed to amend these failures shows how a form of decision making which is 'ad hoc' (Ewen, 2006, 209) and reacts to events once they have unfolded to enhance fire fighting for future contingencies. Rather than visions of the future coming to organise fire brigades and justify the brigades' strategic decision making, dealing with the failure of precautionary measures shows how the rationality of fire brigades was still conditioned by reacting to events as and when they occurred. As such, fire brigades were still organised around information on past occurrences of fire.

Between September 1940 and May 1941, the Luftwaffe dropped 45,000 tons of bombs across Britain (See Wallington 1981). Although understood as a failure in terms of fulfilling its aims of stunting the production of military equipment and also failing to meet the estimates of the ARP committee, the blitz was catastrophic by its effect on civic infrastructure and caused the loss of approximately 41,000 lives. In London, the fire brigade attended over 13,000 fires alone during September and October 1940 (2010, Ewen). As with the Great Fire of London, Edinburgh and the Tooley Street fire, reflecting on fire brigade strategy in responding to the blitz instigated reforms in the fire brigade.

Even though it over-estimated the consequences of the blitz, the analyses of the ARP had been accurate in predicting major damage and loss of life from air raids. What failed more than these estimations was the planned strategic approach to responding to bombing. This failure was particularly evident in the *Fire Brigades Act's* guidance for mutual assistance between fire brigades. The framework for mutual assistance between different brigades was dysfunctional from the time of the early raids and onwards. In a bombing of Thameshaven oil depot in Essex, a major fire broke out. Being outside of a heavily industrialised space, the local brigade requested equipment and personnel from the London Fire Brigade (LFB). On request, the LFB sent water pumps and appliances along with extra personnel. However, 'under the statutes of the Fire Brigades Act 1938' (Hollis,1985, 104) no previous agreement had been

made by the two brigades and the equipment of the LFB was sent back. Eventually, William Spens,

Commissioner of Local Civil Defence, had to intervene to over-ride the statutes of the Act to allow the

LFB to help the brigade at Thameshaven.

This coordination failure was due to how mutual assistance frameworks were based on regional

boundaries established by the *Fire Brigades Act*. As I have noted, different response times were

established for different areas in Britain. However, as summarised by Ewen, 'air raids paid no attention

to local government boundaries' (2006. 210). Although representing the worst case scenario,

estimations did not account for simultaneous fires which blurred the ordered geographical space upon

which response had been planned.

The ineffectiveness of co-ordination in responding to incendiary bombing was accompanied by a lack of

appropriate equipment. Although the ARP committee had projected the worst case scenario of the

future and over-estimated the consequences of the blitz, provisions for fire fighting were inadequate in

terms of a lack of resources and the durability of these resources during sustained air raids. Hollis notes

how there was 'a shortage of fire-boats, turntable ladders, hose drying equipment' (1985, 77) which

'was especially noticeable during the blitz' (ibid). Provisions supplied were over used and became less

effective over time. This is evident from the first day of the blitz in London. The LFB's message book for

the 7th of September 1940 at 22:35 reports then that 'Owing to the seriousness of the fire situation in

London no relief can be arranged for appliances until further notice' (1940, 41). The measures put in

place to counter the threat did not reflect the severity of estimations.

With an inadequate connection between analysis and strategic decision making on resource allocation,

the precautionary measures implemented failed when the future projected unfolded in the present. The

experience of air raids in 1940 proved 'the catalyst for major restructuring, highlighting serious

inadequacies in the effectiveness of fire fighting' (Ewen, 2006, 221). In reaction to air raids, the Fire

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Services (Emergency Provisions) Act (1941) handed complete control of fire brigades to central

government. Until 1947[48], thirty-eight fire brigades operated across Britain. In the midst of heavy raids,

Home Office secretary Hurbert Morrison explained the reasons for full nationalisation:

> Now with intensified attack, a drastic change of organisation must be made. In spite
>
> of all that has been done, or can be done, to develop and improve emergency Fire Service
>
> a fundamental difficulty remains and springs from the fact that the Fire Service is a local service
>
> (1943, 1)

The analysis and strategic approach which comprised the precautionary measures put in place failed

when air raids took place. Hypothetical estimations of the consequence of incendiary bombing appeared

exaggerated when air raids began. Furthermore, convoluted mutual assistance frameworks and a lack of

appropriate equipment stunted fire brigades' response to air raids. In reaction to these failures, fire

brigades were nationalised for the first time.

This section has detailed how fire brigade operation was problematised before and during the blitz. This

problematisation ushered in precaution against a new threat. In taking precaution against the blitz, fire

brigades were increasingly controlled by central government. I understand precaution, however, also as

a logic anchored by specific modes of analysis. These precautionary analyses facilitated a re-conception

of fire as an event. Due to the threat of the incendiary bomb the possibility and consequence of fire

extended beyond its traditional expression through everyday trends. Hypothesis and estimation

intervened to offer new renditions of fire in war time. Rather than being embedded in trends built up

over time, fire was understood to have a catastrophic potential.

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[48] At this point, the Fire Services Act (1947) placed fire brigades back under the control of local authorities.

Enacting strategy in connection to the future that precautionary analysis envisaged proved impracticable in a number of ways. Although precaution was concerned with gauging fire's future possibility, it was strategically manifest through response. Fire, as in earlier periods, was conceptualised as an event to be strategically intervened upon ultimately as and when it occurred. Overall, precautionary analysis and strategy failed. The failure of precautionary measures is evident in how the impact of incendiary bombing was over-estimated in analysis, the inadequacy of standardised coordination procedures and the lack of appropriate resources. In dealing with these failures, strategic decision making fell back to its past incarnation and is actualised through the experience of, and reaction to, events after they have occurred. This reactive decision making is evident at the point that fire brigades were nationalised in 1941.

2.6 Conclusion

In this chapter I have offered a genealogical account of organised fire brigades in Britain. Through a genealogical approach, I have avoided any search for the origin or essence of fire brigades and fire governance. 'What is found at the historical beginning of things (1997, 79), according to Foucault, 'is not the inviolable identity of their origin: it is the dissension of other things. It is disparity' (ibid). This disparity has been explored in this chapter through the dynamic, rupturous historical development of fire brigades and fire governance.

The history of fire brigades is actually the history of different ways in which fire governance has been problematised. I have shown how different rationalities which have underpinned the operation of fire brigades have been destabilised and rendered anew in line with wider shifts to the historical-political conditions in which fire brigades exist. The problematisation of fire brigades and their operation has been traced through three aspects of fire governance. I examined how fire brigades have been organisationally arranged and coordinated by the relations which hold between different institutional

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sites across society. Multiple sites have subsidised and managed fire brigades: extending from private insurance companies to local authorities and central government.

The arrangement and coordination of fire brigades forms the conditions of possibility for the development of the two other aspects of fire governance I have investigated in this chapter. Firstly, I have discussed different ways in which fire has been known and made an object of analysis. This meant outlining the various analytic regimes which have been applied to articulate fire as an event. I argue that these ways of knowing fire, secondly, have facilitated, shaped and conditioned the deployment of strategic techniques by which to govern fire. The strategies I have discussed include precautionary planning in war time and the implementation of prevention in the eighteenth century. Predominantly, however, I have focused necessarily on the making and remaking of means to respond to fires as and when they occur.

In terms of their arrangement, fire brigades are emblematic of the governmental forms of power-relations that Foucault (2007) associates with emergent security apparatuses of the eighteenth century. In other words, fire brigades have been coordinated by relations held across multiple institutional sites. In this chapter I have identified these sites and relations. I have argued that the sites involved in the management of fire brigades have been subject to continual change. Owing to the failure of King Charles II to provide adequate equipment in the aftermath of the Great Fire of London, the first organised brigades came into being under the control of insurance companies. What were known as the insurance brigades operated for over a hundred and fifty years before fire governance was moved under the remit of local authorities. In these examples alone, the formation of fire brigades was conditioned by a number of destabilising political factors. Thus, fire brigades were first formed due to the sovereign's failure to provide adequate fire fighting resources in the aftermath of the Great Fire of London. Later on, the function of fire brigades was a matter of contestation. Brigades were seen as simultaneously a

private enterprise and a public good until they were taken under the control of public authorities in the mid-nineteenth century.

I have argued that how fire brigades were arranged made possible particular forms of knowing fire as an event through analysis. Since the Great Fire of London, different calculative logics have been deployed to capture fire's potentiality. In the case of the insurance brigades, the notion of hazard rose to prominence in the seventeenth and eighteenth centuries. Fire's potential was calculated through information on the built environment, the occupations of the insured and, judged on past incidents, how these variables affected the possibility and consequence of fires. At the time of Braidwood and Shaw, hazard was supplemented by the notion of probability. Hazard analysis was superseded by the identification of trends relating to fire's temporal occurrence and the establishment of correlations between fire outbreak and the occupation of victims. The displacement of hazard ratings by probability was paralleled by shifts in the organisational arrangement of the brigades. With their transferral into the hands of public authorities, brigades no longer sought to secure the profits of insurance companies. Instead, brigades prioritised securing and governing human life.

The analytic logics under which fire was understood facilitated and conditioned the enactment of different strategic techniques to govern fire. In the chapter, I described how the logic of hazard ratings shaped the housing classifications which were instantiated by the *Fire Prevention Act*. Furthermore, hypothetical assessments of the impact of incendiary bombing informed the development of air raid precaution schemes and mutual assistance frameworks.

As strategies, prevention and precaution arose at specific and singular moments[49]. The strategy of response, however, appeared across the historical periods I have examined. The strategy of response

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[49] Prevention arose but then quickly subsided, possibly owing to the management of prevention by central government. As I have known, the statutes of the Fire Prevention Act were continually undercut after the Act was installed. Precaution, on the other hand, responded to the specific need of governing fires in war time.

has been made and remade at different times. With the use of probability logics under Braidwood and

Shaw, for instance, response was tailored to different population trends such as the time at which fires

are most likely to occur. I have shown in other cases how response is conducted in a way that is

conditioned by the particular arrangement of fire brigades in different historical periods. The ability to

respond, and to whom response was prioritised, were central points of contestation where fire brigades

were controlled privately but expected to attend fire events which occurred outside of insured sites.

Furthermore, arguments for the nationalisation of fire fighting in the time of war were sustained by the

co-ordination failures between different services in responding to incendiary bombings.

I have shown in this chapter how the sites which managed fire brigades, knowledge on fire and

strategies for governing fire have transformed through history. Nevertheless continuities in fire

governance do exist through the historical periods I have researched. First, there is the persistence of

response strategy through different eras. The endurance of response suggests more broadly that a way

of thinking about intervention upon fire has remained stable through history. In every historical period

the need to respond to fires as and when they occurred remained a priority for fire brigades. For

example, the probability calculus of Braidwood and the precautionary analysis of the ARP both sought to

gauge fire's potential in the future but only to direct strategy when fire's occurred in the present. In

neither case was there an attempt to prevent or pre-empt fires from occurring in the first place. Fire

mitigation has thus been understood to take place predominantly in an ever-evolving present.

Another form of continuity through the historical development of fire brigades is what I have called a

reactive or ad hoc form of decision making. For instance, fire brigades were only established once so

many fires had occurred that insurance companies began to make significant losses on premiums. In

Edinburgh, disparate insurance brigades were consolidated to form the EFEE in reaction to a fire which

ruined most of the city centre. Finally, fire brigades were nationalised as a reaction to the failure of

precautionary measures in the blitz. The decisions made in these examples all have one thing in

common. Although fire was known by its potential, fire brigades were mostly organised and strategically

shaped by what could be said about fire's occurrence in the past rather than fire's possibility in the

future.

The continuities I have outlined here have been broken in the contemporary FRS. Thus, the current FRS

is the product of a new problematisation of fire governance. This problematisation was brought about

by, and is organised around, what can be said about fire under the epistemological parameters of risk in

the twenty-first century. I turn to discuss the contemporary problematisation of the FRS in the next

chapter.

Chapter 3. Governing through Everyday Risk in the Contemporary Fire and Rescue Service

3. 1 Introduction

The last chapter offered a genealogical account of fire brigades and fire governance at different historical moments. I drew on Foucault's notion of genealogy (1991) to avoid searching for any supposed essence, origin or teleological goal that fire governance might be deemed to have. Rather than a linear historical narrative that might emanate from such an origin, I described the development of fire governance and fire brigades by their dynamism through time.

Capturing the dynamic development of fire brigades meant seeing the history of fire governance as a history of problematisations. Problematisation refers to processes by which accepted forms of action and understanding are destabilised and regenerated anew. Through problematisation I identified different historical, political and social factors which brought about changes to fire governance. As products of continual problematisation and reproblematisation, three crucial aspects of fire governance took centre stage across the historical periods I discussed. Firstly, I examined how fire brigades have been arranged, coordinated and organised across different institutional sites and the relations between these sites.

The matter of how fire brigades are organised conditions the development of two other aspects of fire governance. Firstly, changes to the power relations which arrange fire brigades made new ways of conceptualising fire as an object of knowledge possible. Changes to how fire was conceptualised were evident, for instance, where fire's articulation as a hazard under insurance brigades was displaced by understanding fire in terms of a broader set of population variables, including human life, when fire brigades came under the control of local public authorities.

Interwoven with how fire has been rendered an object of knowledge, I also examined the development, deployment and redeployment of different strategic techniques which govern and intervene upon fire. In the chapter, I discussed both the implementation of prevention and precaution techniques at different historical moments. Prominent throughout all the historical periods discussed, furthermore, was the redeployment of strategies used in responding to fires.

I argue in this chapter that the operation of the service has again undergone problematisation in the contemporary. How the service is arranged, how it strategically governs fire and the way in which fire is conceptualised has transformed. This new problematisation of fire governance is responsive to shifts in the service's situatedness within wider governmental power relations and in adaptation to a host of disruptive events. As shown in the introduction to this thesis, the contemporary problematisation of the FRS is guided by, and consolidated in, new legislation and policy which arose in the early years of the twenty-first century. Bringing about major organisational change to the FRS, policy such as the *Fire and Rescue Services Act* (2004) and the white paper *Our Fire and Rescue Service* (2003) sought to redefine the operations of service in lieu of a new set of future events whose possibility became plausible due to terrorist events such as 9/11 and a host of natural disasters.

The contemporary FRS governs through risk. What I mean by governing through risk is that projections of fire risk now determine and facilitate the whole operation and rationality for governing in the FRS. Governing through risk is evident in a number of ways. Firstly, strategic intervention does not revolve primarily around action as and when fires occur[50]. Rather, risk projections are used to enable different forms of strategic action in the present. Although taking place in the present, these interventions are directed toward the future that risk calculations make visible. Secondly, the interventions the FRS makes in the present are justified through risk. Fire risk projections thus give the FRS the legitimacy to

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[50] Indeed, in chapter eight I discuss how FRS response as and when fires occur in the contemporary is mediated and guided by numerous forms of risk assessment and anticipatory protocol. These risk assessments and protocols are assessed and developed through training exercises the FRs undertakes.

intervene and govern in the here and now. Resonating with the repositioning of risk that Adam (2000) was seen to claim in the introduction, risk is also used by the FRS now to reflect upon and affect itself as an organisation. In other words, risk projections are used to shape the organisational arrangement of the FRS and also justify the existence of the FRS in the contemporary.

The three aspects of fire governance focused on in the last chapter; the organisational arrangement of the brigade, the conceptualisation of fire and strategies to govern fire, are returned to and assessed in this chapter to discuss the contemporary problematisation of the FRS. On the matter of arrangement, I pay particular attention to how current policy such as the *Localism bill* (2011) and the FRS *National Framework* (2008) have consolidated and furthered the way in which the FRS is conducted between centralised and disparate sites of government. I will argue that new organisational practices have been established to maintain and solidify this arrangement. The FRS is instilled here with what Du Gay refers to as an 'entrepreneurial ethos' (2003, 675) under its contemporary problematisation. As will be shown, this ethos is crystallised by the organisational practices of auditing and accountability. These practices are integral to the FRS's utilisation of fire risk projections in the contemporary and are thus crucial to describing how the FRS governs through risk. Auditing works to consolidate the arrangement of the contemporary FRS by working as a mediating mechanism between central government and the local government sites at which individual FRSs are put into practice. As I stated in the introduction, central government sets and proscribes the overall strategic goals and aims of the FRS[51]. It is at the sites of local FRSs distributed throughout the country that actual fire governance and intervention is enacted. Auditing has the function, then, of ensuring that central government goals are actioned at local FRS sites.

Accountability allows the service to justify its existence and the interventions it makes in the present through projections of fire risk. The practice of accountability achieves this justifying function by

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[51] This guiding function that central government has is evident by the fact that central government establishes major Acts of Parliament that impact on the FRS, such as the *Fire and Rescue Services Act* (2004) or the *Localism Bill* (2011).

showing to central government and local communities that the FRS continues to be an integral and essential agent of emergency response. In practice, the FRS justifies itself through documenting the continual prevalence of fire risk. Through documents such as the *Integrated Risk Management Plan* (IRMP) in turn, the FRS shows how risk projections are aligned to strategic decisions about resource deployment to govern fire.

The organisational arrangement of the FRS is aligned to and makes possible a particular conceptualisation of fire as an event and risk. The forms of knowledge and analysis which render fire risk emergent are the primary focus of the next chapter on the digital infrastructure of the contemporary FRS. I will argue in this chapter, alternately, that fire is understood as a risk that varies according to the character of populations in different localities across Britain. The understanding of fire as a risk determined by local factors is apparent in the IRMP document I mentioned earlier. I note that this conception of fire as a risk which prevails according to local circumstances corresponds to changes enacted across government by the *Localism Bill*. Although central government still retains ultimate control, the *Localism Bill* affords individual FRSs more authority in making decisions which shape fire governance. I argue here that the conceptualisation of fire as a locally prevailing risk calls for and justifies the decentralised arrangement of the FRS.

As I outlined earlier, governing through risk is evident not only in how risk comes to shape the FRS as an organisation or how risk works to justify the arrangement and existence of the FRS. I also stated that governing through risk affects the strategic interventions the FRS makes. On the basis of fire risk projections, these strategies allow the FRS to intervene in the present but in a way that is directed at the future. In discussing these strategies in this chapter, I introduce what I refer to as the strategic architecture of the contemporary FRS. This architecture comprises three complex modes of action: response, protection and prevention. I will show that, rather than being enacted as and when fires occur,

these strategies all operate in anticipation of fire. Under governing through risk, these strategies are organised around, and intervene in the present on the basis of, what can be said about fire as a risk.

In exploring and outlining the contemporary problematisation of the FRS, the chapter is structured as follows. Following Ewald (1991) and O'Malley (2004a) in stressing the heterogeneous forms governance can take, the first section shows how governing through risk has been applied specifically in the case of the FRS to govern fire. What I focus on is how anticipatory modes of governance, although developed to attend to other large scale risks, have become localised and attuned specifically to fire and its character as what I called in the introduction an everyday risk.

The subsequent section looks at how the conceptualisation of fire as a risk in the contemporary must necessarily correspond with how the FRS is arranged organisationally. In this section, I also examine how the practices of auditing and accountability have become integral to the contemporary problematisation of the FRS. In the last section, the strategies for intervention under the problematisation of governing through risk in the FRS are introduced. What I outline in this section is the strategic architecture of the contemporary FRS. I will show how each of the strategies within this architecture are enacted in anticipation of fire.

3. 2 Governing through Everyday Risk in the Contemporary FRS

In the last chapter, I showed that different regimes of analysis have been deployed to understand fire by its potential. In the seventeenth century the potential of fire was tabulated through hazard ratings. Experiential knowledge of past events was used to establish causal relations between the occurrence of fire and the vulnerability of different building materials to fire. In turn, insurance premiums could be sold which amounted to a form of protection against fires of the future. Later still with Braidwood and the precautionary analysis carried out in anticipation of the blitz, fire was captured in its potential by more complex forms of analysis. The likelihood, frequency and possible consequence of fire was

calculated through new regimes of quantification which established fire trends or estimated the consequence of fire through hypothesis.

How fire was conceptualised as a potential event continually transformed through these historical periods. There exist also, however, continuities in understanding the potential of fire through these periods. Most prominently, fire might be understood, in Foucault's terms, as an 'aleatory' (2007, 20) event. In other words, fire has continually been understood as an inevitable, accidental product or occurrence of everyday life.

A new problematisation of fire governance has been brought into effect in the present day. Central to this new problematisation is a new conceptualisation of fire as an event. The new problematisation of fire governance was engendered by new government policy and legislation in the early twenty-first century; particularly the white paper *Our Fire and Rescue Service* (2003) and the Act the *Fire and Rescue Services Act* (2004). These documents sought to restructure the FRS on the basis of what could be said about fire as a risk. The FRS was to be organised around the risk that fire presented 'to life, the economy, heritage and the environment' (2008, 12).

The *Fire and Rescue Services Act* explicitly states that the organisational changes to be enacted in the FRS are in direct response to 'the aftermath of the events of 11 September 2001 and the growing threats to our society from chemical, biological, or radiological and nuclear attacks' (2004, 6). The instituting of governing through risk through statements such as that in the *Fire and Rescue Services Act* resonates with a general consensus across much literature on post 9/11 security. This consensus is that risk projections are not only to be used to inform risk mitigation in the contemporary. Rather, the importance of risk projections is found in how risk projections open up the possibility of developing new forms of governance. These forms of governance intervene in the present but are shaped around, and

justified through, visions of the contingency in the future. (See, for instance, Amoore and De Goede, 2008).

With regards to the FRS, O'Malley is correct when he states that 'it is important to note that new forms of securities are being invented' (2004a, 10) where risk identification becomes a means through which to shape security organisations and justify the interventions these organisations make. However, it is also important to note that security organisations take different forms and act differently. O'Malley continues then to state that security is a 'complex category made up of many ways of governing problems rather than as a unitary or monolithic technology' (2004, 7).

Along with being represented as catastrophic, events such as 9/11 have been used as opportunities to invent new forms of governance that operate around risk. Changes to the FRS in the aftermath of such events are part of wider strategic changes found amongst other security agents such as border security (Amoore, 2009b, Salter, 2013). However, governing through risk must also be understood within the specific context of the FRS. I argue that the contemporary problematisation of the FRS represents an appropriation of anticipatory governing techniques which were developed in the aftermath of events such as 9/11. These anticipatory forms of governance are localised by the FRS and attuned specifically to how fire risk is understood or, in Dillon's terms, 'the nature of the thing to be governed' (2007a, 45).

I have stated that anticipatory forms of governance developed out of new conditions of possibility opened up by the large scale catastrophes of the early twenty-first century. These events include terrorist attacks and natural catastrophes which, as Aradau and Van Munster argue 'disrupt progressive, linear and serialised understandings of time' (2012, 100). Anticipatory forms of governance found their legitimation initially, then, in events and possible future events that are understood to have the capacity to destabilise normative social landscapes.

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These events of catastrophic, destabilising proportion are entirely different from how fire is understood

as an event in the present day. Rather than possessing the potential to rupture deeply embedded

normative order, fire is understood as an everyday risk. In contrast to large scale contingencies, the

event of fire is engrained within, and a product of, everyday life. The everyday character of fire is

evident in the kinds of statistics generated to know fire. According to the report *Fire Statistics Great*

Britain 2010-11 (2011), the FRS attended 286,500 fires across Britain between 2010 and 2011. The

amount of those fires occurring within domestic premises was 44,700. The main causes of fires within

domestic premises was 'the misuse of equipment and appliances' (2011, 10), particularly equipment

related to cooking. Although it causes major disruption to the victim, fire is an everyday, normal

occurrence. Governing through risk in the FRS shows how anticipatory modes of governance have found

a new field of application. Although initially attendant to large scale contingencies, these modes of

governance have now been tailored specifically to the everyday risk of fire.

I will show later how anticipatory modes of governance have been applied to fire risk with the

introduction of what I call the new strategic architecture of the FRS. Before this I argue that, by its

conception as an everyday risk, fire is also a risk bound to and determined by local circumstances. In

other words, fire is understood to occur in accordance with the specific population characteristics of

different localities across Britain. Because fire risk prevails in different ways across different localities, it

is held by the government that the FRS is best controlled at the level of local public authorities. The

control of the FRS at disparate local sites is supported by recent government policy such as the *Localism*

Bill (2011). I also discuss the *Localism Bill* to argue that the coordination of the FRS at disparate local

sites makes two institutional practices vitally important to the contemporary FRS. These practices are

auditing and accountability. Auditing serves to maintain and stabilise the dispersed configuration or

arrangement of the FRS by making central government aims correspond to strategic action undertaken

at local FRS sites throughout the country. On the other hand, accountability shows how the actions and existence of the FRS are justified through projections of fire risk.

Overall, the next section outlines two crucial elements of governing through risk. Firstly, that governing through risk means risk projections shape the organisational arrangement of the FRS. Because fire risk prevails differently at different local sites, the FRS must be controlled primarily at disparate local sites. Secondly, risk projections justify the existence and actions of the FRS. The justification of the FRS through risk identification is apparent in the next section in how the practice of accountability allows the service to show its continuing importance by showing how fire risk continues to prevail.

3.3 Auditing and Accountability: The Dispersed Entrepreneurial Spirit of the FRS

National control of fire brigades was discontinued within two years of the Second World War ending. As recent as the last government[52], however, the service seemed to be steering back towards centralisation. The introduction of Regional Improvement and Efficiency Partnerships (RIEP), for instance, sought to create a more cohesive, homogeneous FRS through strengthening relations between local services. A swath of policy by the current coalition government put a stop to the possible centralisation of the FRS. In its current arrangement, the FRS is more detached from central government than at any point since the 1800's.

 The service's decentralised arrangement was consolidated by the changes introduced by the *Localism Bill* (2011) of 2011. With strong resonance to Du Gay's (2003) claims concerning epochalism in public service discourse, the *Localism Bill* sought to engender changes in the organisational structuring of the FRS by eliminating 'bureaucracy'. Minister Greg Clarke's forward to the Bill introduces the changes that the *Localism Bill* will bring couched in the following rhetoric:

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[52] Referred to here is the Labour government 1997-2010.

For too long, central government has hoarded and concentrated power. Trying to improve

people's lives by imposing decisions, setting targets and demanding inspections from Whitehall

simply doesn't work. It creates bureaucracy (2011, 7)

As Du Gay's work summarises, Clarke's line of argument is one that establishes 'sets of dualities and

oppositions in which the discontinuity between the past and the future is highlighted' (2003, 670). What

Clarke highlights is how centralising the FRS is impractical in enacting fire governance. For what has

been defined as governing through risk to be successful, central government cannot be seen to be

'imposing decisions' (2011, 7) on local FRSs from a distance. As Clarke states, the Bill was introduced

under the conviction 'that power should be exercised at the lowest possible level-close to people who

are effected by decisions, rather than distant from them' (2011, 4). For the FRS to operate on the basis

of the future that risk captures, the FRS must be controlled at local sites dispersed across the country.

Configured as a dispersed set of local sites, the FRS is shaped around how risk is conceptualised.

Consistent with how it has been understood previously, the possibility of fire events occurring must be

understood as geographically relative and determined by local circumstances. Since the 17th century, the

built environment of different areas has been assessed to better understand the prevalence of fire risk

and hazard. The perception of fire as a risk determined by local circumstances has been extended in

contemporary literature produced by the FRS I studied.

In its *Community Protection Plan* for 2010/11- 2012/13 (2010), the FRS establishes a risk profile for its

area. This risk profile offers an account of the specific risk fire presents within the localities served.

Documented first is the general topography of the area, describing the terrain and density of human

populations. It is stated that 'the larger industrial and commercial towns are in the east of the area; in

contrast the west is pre-dominantly rural consisting of open moorland and wooded river valleys and is

sparsely populated' (2010, 10). Demographic analyses is then offered of the area which aggregates the population by ethnicity and age along with stating that 'economic activity in the area is low- almost 10% lower than the national average' (2010, 11). The document then goes onto state that: 'These factors impact on the risk profile... and therefore help us to determine where we need to allocate resources' (2010, 12).

The generation of a 'risk profile' here shows how fire is a risk whose prevalence is relative and determined by circumstances in local areas. This understanding of fire as a local, everyday risk is used to inform the arrangement and organisation of the FRS. As risk perception is now used to organisationally shape the FRS, the arrangement of the FRS at dispersed local sites is deemed necessary. Taken as a risk which prevails in different ways according to local circumstances, fire is understood, as central government documents show, as 'too complex, cross cutting and local for solutions to be imposed from the centre with finite resources' (2007, 7).The arrangement of the FRS at local sites assimilates to, and is justified by, how fire as a risk is perceived. In the words of the *Integrated Risk Management Plan* (IRMP) of the service studied, the dispersed arrangement of the FRS as an organisation allows individual services to attain 'the flexibility to utilise its resources most appropriately to manage risks to life and property specific to local areas through a balanced approach to community fire safety and emergency response' (2012, 2).

The conceptualisation of risk does not only act to arrange the FRS in a specific way in the contemporary. With the *Localism Bill*, a situation is also created in which 'organisations are to be made more responsible for securing their own future survival and well being' (Du Gay, 2003, 675). Rather than only serving to organise the service, the identification of fire risk becomes the means through which the existence of the FRS is justified. As Du Gay would state, the FRS is instilled with an 'entrepreneurial spirit' (ibid) here. This entrepreneurial spirit arises because the FRS needs to be seen to earn, rather than

simply receive, its funding. As I will now turn to show, risk is identified to shape the FRS's organisational

structure but also to justify the ongoing existence of the FRS. By identifying how fire risk still prevails,

the FRS simultaneously shows that it is still needed.

Michael Power suggests that the transformation of public administration into something that is

entrepreneurial derives from the spread of auditing as common practice in the 1980's (2003, 2009). The

significance of auditing will be returned to shortly. However, what seems to condition and enact

entrepreneurial processes in the contemporary FRS is the notion of accountability. Recent consultation

for the service's *National Framework* states explicitly, then, that 'it is to local communities, not central

government that fire and rescue authorities are accountable' (2012, 2). Under the rubric of

accountability, risk is utilised as a medium through which the existence of the FRS can be justified to the

localities served. As the *Localism and Accountability Report* (2012) describes accountability 'should

provide the platform for public engagement with the services provided by their local FRS' (2012, 3).

Through 'facilitating public awareness of fire service functions' (2012, 5) accountability should include

detailing how central government funds are spent by local FRSs and the success of resource allocation in

attending to identified risk.

As a practice of accountability, the *Annual Spending Review* (2011) shows how the identification of risk

justifies the on-going need for the existence of FRSs. The rhetoric adopted in spending reviews positions

the FRS as a service which is vital for mitigating the disruption that fires cause. What is more, spending

reviews properly bring to the foreground how the ability to align resources to risk is dependent upon,

and complicated by, wider political processes. The acquisition of adequate funding to ensure

appropriate resources is something which relies on detailing how risks might amplify if funding is

reduced. In the current spending review of the FRS I studied, a specific concern is the reduction of

budgets for public services and how budget reductions might impact on the exposure of society to fire risk. As developed in the document itself then:

> If funding cuts threaten the ability of a FRS to deliver an effective response service
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> FRSs may have little choice but to reduce the extent of our prevention work. The impact of
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> this will be felt in years to come and the cost to society is likely to rise (2011, 1)

In their work on the facilitation of the pre-emptive strike, Amoore and de Goede argue that interventions by security apparatuses are enabled by a logic that operates on the basis of a worst case scenario. This vision of the future by its worst case scenario justifies the deployment of resources which in 'itself plays a role in shaping a contingent future' (2008, 182). This same action of ensuring the distribution of resources by detailing an inter-related, co-dependent future is present in the context of the everyday risk of fire. The very existence of the FRS is dependent on the capacity to show how fire risk continues to prevail and detailing the need for measures to safeguard against these risks. Along with shaping the organisational arrangement of the FRS around risk, governing through risk is manifest in another way with the rise of accountability. Risk identification becomes the basis for the provision of funds and thus justifies the existence of the FRS.

Thus far in this section I have discussed two crucial elements of the contemporary problematisation of fire governance; a problematisation I have labelled governing through risk. I have argued that that how risk is understood, known and conceptualised as an event shapes the organisational arrangement of the FRS. Because fire is a risk determined by local factors, the FRS must be primarily controlled at local sites throughout the country. This local and disparate arrangement is supported by recent government legislation such as the *Localism Bill*. Alongside the *Localism Bill*, the practice of accountability rises to prominence in the FRS. By offering a medium through which the FRS can engage with localities served,

accountability makes possible another crucial element of governing through risk. I documented with

spending reviews how risk identification operates to show that there is a continuing need for the FRS.

Accountability shows here how governing through risk means using risk projections and identification to

justify the continuing existence of the FRS.

The entrepreneurial spirit of the contemporary FRS has a past in another organisational practice:

auditing. Auditing practices, as Power's (2003, 2009) work shows, can be traced through the history of

public service in Britain. Furthermore, practices of auditing still play a crucial role in the contemporary

FRS. This is particularly the case in how auditing functions to co-ordinate the practices of the disparate

sites of the FRS. Although managed largely at disparate, local sites auditing works to give some over-

arching and centralised coherence to FRS strategy.

Power's work shows how the practice of auditing was transformed through its extension into the

routines of public organisations as part of Thatcherist reforms in the 1980's (2003). At this time the term

audit itself broke out of the confines of the financial organisations in which it developed and began to

adopt a more prominent position in the management of the public sector. Auditing did not just guide

budgetary matters but also shaped multiple aspects in the operations of public organisations. At this

point, the 'auditor becomes an explicit change agent, rather than just a verifier' (2003, 189). What the

change results in, for Power, is a growing similarity between the way in which the public sector is

managed and the 'enterprise risk management' (2009, 849) associated with private companies. In

Power's commentary, risk is understood to have the capacity to create public services that are leaner

and represent value for money. This drive towards more entrepreneurial public services is couched in

terms around improving the efficiency of public services.

The influence of auditing in creating public services in the way Power describes can be seen in FRS

literature. This is particularly the case in the Audit Commission's 2008 report *Rising to the Challenge:*

Improving Fire Service Efficiency (2008). This report scrutinised all aspects of FRS operation in order to suggest ways in which financial savings might be made. The possibility of making savings is primarily understood in relation to fire risk and the need to enact savings specifically through better strategic decision making around how to govern fire risk. Judgements around how financial efficiency might be improved in relation to the prevalence of fire risk are expressed throughout the report, initially stating that: 'The total cost of fire to the economy was £7 billion in 2004' (2008, 2). To meet this cost, 'service funding has risen from 1.3 billion to 2.1 billion in the last decade' (ibid). By equating the economic consequence of fire to the resources deployed for fire's mitigation, the target savings by 2010 for the FRS nationally was £110 million (ibid). These savings were to be achieved through 'shift and crewing improvements' (2008, 3) and through reducing the need for response to incidents by increased prevention work.

Along with accountability, auditing practices are a key driving force initiating changes to how the FRS is organised and operates under governing through risk. However, the role of auditing in such a dispersed organisation as the FRS is not just to make efficiency suggestions by seeking to better align resources to risk. Instead, the position of the auditor must be recognised and discussed. This position is one that is external to individual FRSs and situated within the government department currently known as Communities and Local Government (CLG). In its contemporary practice, auditing mediates between national government and decentralised FRSs. Auditing acts here to co-ordinate de-centred, heterogeneous FRSs towards the overall strategic goals and aims of central government.

The co-ordinating function that auditing has for the FRS is enabled by the production of a two yearly *National Framework* (2008). The *National Framework* establishes broad strategic parameters under which individual FRSs should operate. In relation to Power's analysis, the *National Framework* can be seen to encompass both the role of a verifier and a change agent. This is done not through enforcing a

stipulated direction for the service but by outlining the 'Government's expectations' (2008, 5) for FRSs. The *National Framework* gives broad outlines about what goals FRSs should be aiming for. At the discretion of individual FRSs, however, is how these goals might be met. The *National Framework* is thus understood as 'a foundation on which to build local solutions. Giving Fire and Rescue Authorities the flexibility they need to meet the specific needs of their local communities, which remain at the heart of the government's approach' (2008, 7).

To create this foundation, central government sets out a number of objectives for development in the day to day operations of FRSs throughout the country. For instance, the *National Framework* specifies particular elements of strategy which need to be improved. For example, the *National Framework* states that the capacity to 'prevent and respond to emergencies' (2008, 8) needs to be enhanced along with a reduction in both 'Arson incidents (deliberate fires)' (ibid) and the 'Number of primary fires and related fatalities and non-fatal casualties' (ibid). Retaining the autonomy of individual FRSs, the suggestions that the Framework makes 'focus more...on the outcomes we want to see delivered rather than the processes we want Fire and Rescue Authorities to adopt' (2008, 9).

The fulfilment of Framework objectives is assessed in relation to changes in the prevalence of fire risk. In the *National Framework* for 2008-11, it was argued, for instance, that 'an increase in the amount of prevention work being undertaken...is contributing to achieving the lowest levels of fire death since 1959' (2008, 7). For the period between 2008 and 2011[53] assessment was undertaken by gauging compliance with 198 indicators which cover all aspects of an FRS's operation.

Auditing practices maintain the decentralised arrangement of the FRS as an apparatus which manages a risk that is relative and determined by local circumstances. The *National Framework* mediates between central government and individual FRSs. This mediation is evident where central government engages

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[53] At the time of writing, no changes to these criteria for assessment have been introduced. However, consultation for a new National Framework is currently being undertaken.

with FRSs distributed across the country to establish over-arching objectives for fire governance. I have

suggested that governing through risk means shaping the FRS around risk. In relation to fire, risk is

determined in accordance with the demographic and built environment peculiar to localities. As such

the FRS takes on a governmental form, being coordinated in a decentralised fashion. The auditing

practices of the *National Framework* allow for the necessary co-ordination of local FRSs from a central

site in order to outline over-arching strategic goals.

In this section, I initially discussed what the adoption of governing through risk means in terms of how

the FRS is arranged. The FRS is arranged and coordinated from disparate sites. This disparate

arrangement is organised around the perception of fire as a risk determined by local circumstances. The

arrangement of the FRS on the basis of the perception of fire as a local risk is evident in the *Community*

Protection Plan 2010-11-2012-13 (2010) but also in the recent *Localism Bill* introduced by the coalition

government. Governing through risk thus means that how fire is conceptualised as a risk works to shape

the organisational arrangement of the FRS.

Alongside the *Localism Bill*, this section has discussed two crucial institutional practices which have risen

to prominence in the contemporary FRS: accountability and auditing. Instilling the FRS with an

entrepreneurial spirit, accountability makes the FRS earn, rather than simply receive, government

funding. Funds are earned through tailoring resource distribution to risk identification. By identifying

how fire risk still prevails, the FRS shows that it is needed. Through the practice of accountability,

governing through risk equates to how risk identification is used to justify the existence of individual

FRSs.

Accountability is accompanied by auditing. Auditing practices function to maintain the coordination of

the FRS at disparate local sites. Taking the example of the *National Framework*, auditing maintains the

arrangement of the FRS by enabling central government to engage with local FRS distributed throughout

the country. By central government setting national aims for fire governance, overall coherence in FRS

strategy is ensured. In the next section, I introduce what I call the new strategic architecture of the FRS

which has been ushered in under governing through risk. In discussing the new strategic architecture of

the FRS I comment on another critical component of governing through risk. Namely, I show how

strategy seeks to intervene in the present but in a way shaped around, and justified through, fire risk

projections onto the future.

3.4 The Strategic Architecture of the Fire and Rescue Service

The *National Framework* operates as a kind of auditing mechanism for the contemporary FRS. The

function of the *National Framework* is to manage the FRS in its dispersed arrangement whilst

implementing an over-arching, general strategic approach for the service. The direction given by the

National Framework focuses on developing a broad strategic architecture which is then tailored by

individual FRSs to how fire risk prevails within their local area. Through the *National Framework*, central

government can 'provide an overall strategic direction and support to empower and encourage them

(local FRSs) but not to interfere in the way in which they serve their communities' (2011, 2, my brackets).

The *National Framework* offers broad guidelines which structure the strategic architecture of the FRS in

attending specifically to the risk of fire[54]. The components of this strategy are shaped specifically around

the future and the risks therein. Overall, strategy is formulated and enacted by a specific relationship

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[54] The *National Framework* is deemed essential to maintaining coherence in the dispersed FRS not just in terms of attending to fire risk. The orchestrating of individual FRSs from this over-arching standpoint is important also to formulating FRS 'national resilience' (2011, 5) strategy. This category of national resilience is quite broad and generic. It is used predominantly to determine the approach of the FRS to risks which are understood to impact upon the nation overall. As such, national resilience outlines FRS responsibilities for potential large scale contingencies such as terrorist attacks or natural crises such as floods. To reiterate, since the *Fire and Rescue Services Act* (2004) and the *Civil Contingencies Act* (2004) the mandate of FRS responsibility has extended to contributing to the mitigation of such contingencies. In terms of the FRS, the focus of national resilience drives at establishing coordinative frameworks with other emergency responders. As national resilience does not directly concern fire risk, it is not discussed in depth in this thesis.

forged between the future and the present. Through risk, projections of the future shape, and provide

justification for, action in the present. Encompassing 'three main areas of Prevention, Protection and

Response' (2011, 6) governing through the risk of fire is deployed strategically by three inter-related

modes of action.

In the chapters to come, I discuss fire governance through two of the three strategies[55]. The strategies I

discuss at length are prevention and response. In relation to the strategies I discussed in the history

chapter, protection has taken the role attributed to prevention in earlier periods. Protection thus seeks

to enact 'fire safety regulations' (2008, 15) on the built environment. Since the Regulatory Reform (Fire

Safety) Order (2005), it is now compulsory for owners of non-domestic properties to undertake fire risk

assessments of their premises and implement adequate fire safety provisions. The FRS inspects non-

domestic properties to assess whether or not buildings are adequately protected from fire risk.

Although enacted upon the risk of fire, protection is less relevant to subsequent chapters and the aims

of the thesis in general for two main reasons. Firstly, the FRS is not solely responsible for intervening

through protection. The governance of fire risk through protection is predominantly carried out by those

managing buildings rather than the FRS itself. The only intervention the FRS makes is through

inspections and decision making on whether improvements to fire safety are required. Secondly,

protection is not informed by the kinds of knowledge I examine in this thesis. The criteria for these

inspections are based on scientific and engineering knowledge concerning materials used for buildings

rather than focusing on statistical or population knowledge.

In keeping with its orchestrating role, the *National Framework* compels FRSs across the country to

produce what has been referred to above as an *Integrated Risk Management Plan* (IRMP). This IRMP

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[55] This is the case with the exception of chapter six. Focused on in chapter six is how governing through risk
engenders a reflexive turn in the FRS, where performance itself becomes a key factor in risk management. This
reflexive turn is enacted through PB Views technology which performance monitors all aspect of strategy in the
service.

takes the strategic direction offered by the *National Framework* and shows how strategies will be localised; made relevant to and enacted within the specific regions and communities to which individual FRSs attend. The IRMP provides this function by shaping strategy around 'all fire and rescue related risks that could affect these communities' (2011, 7). In this section, I will first discuss how response is enacted under the problematisation of governing through risk. I will then turn to examine the redeployment of prevention under governing through risk.

The term response might be seen initially to have a tenuous connection to governing the future. Indeed response is described by the IRMP of the FRS studied as the collection of protocols enacted 'when despite the priority we place on prevention and protection measures an emergency incident will occur' (2011, 9). Response might at first sight appear as action solely taken as and when events occur or once anticipatory strategy has failed. Similarly, one way in which response has been understood in wider literature on governing the future is as 'the needs and capabilities of a distributed set of actors *after* an event, rather than prevention or pre-emption before the event' (Anderson, 2010b, 230, my italics).

Although response remains a strategy attendant to the present unfolding of an incident, governing through risk has extended to, incorporated and renegotiated how response strategy is thought of and practiced. Under governing through risk, response strategy equates to two forms of action carried out in anticipation of fire. On the one hand response now refers to preparatory activities undertaken to ensure the mobilisation of FRS resources for future fires. Response is used to enable thinking on how FRS resources can arrive promptly at the site of future fires. Secondly, response is made anticipatory through the development of protocols which will be deployed in the event of a fire at specific sites. In this second incarnation, then, response refers to the formulation of operating procedures when attending to future fires at specific sites. In line with *The 9/11 Commission Report's* (2004) description,

response strategy is now understood as a crucial component of preparedness in attending to incidents should other anticipatory strategy, such as prevention, fail[56].

Preparing the mobilisation of FRS resources is achieved in anticipation of fires through 'response standards' (2011, 8). Attempting to guarantee the FRS's arrival at the scene of a fire within a confined timescale, these response standards are set out below:

'Our response standards are currently set at the following:

- We will attend 70% of all house fires within 8 minutes and 90% within 11 minutes

- We will attend 70% of all non-domestic fires (factories, shops, offices, schools etc) within 8 minutes and 90% within 11 minutes...

- We will answer 999 calls to the service within 6 seconds' (2011, 8)

Through response standards the FRS creates a linear spatial-temporal narrative to structure the mobilisation of resources in the occurrence of a fire in the future. As I show in chapter six of this thesis, calculations of the distance between the FRS's resources and the location of a fire are undertaken to predetermine the time it should take the service to arrive at the scene of a fire. In terms of governing interventions, response standards are created in the present to impose mechanisms of control upon risks of the future.

To impose control, response standards function to render governance of the future automatic. Standardising response, as Adey and Anderson might argue, is a 'dream of emergency responders' (2011a, 2878) where response protocol is part of building 'an anticipatory system without the need for

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[56] A key finding of *The 9/11 Commission Report* was that 'the emergency response to the attacks on 9/11 was necessarily improvised. In New York, the FDNY, NYPD, the Port Authority, WTC employees, and the building occupants did their best to cope with the effects of an unimaginable catastrophe... for which they were unprepared in terms of both training and mindset' (2004, 315). The report's recommendations on the basis of this finding sought to ensure that response was thought of as part of a broader preparatory element for future possible catastrophes. The development of response standards in the FRS that I discuss in here are a means by which preparing response can be institutionalised.

the event of decision' (ibid). The establishing of a linear temporal narrative in response standards shows how the mobilisation of the security apparatus can be automated; assuming the ability to control fires before an incident has taken place.

The automation of governance through establishing response standards for future occurrences of fire is possible because of the everyday temporality of fire risk. As I demonstrated earlier in the chapter, the occurrence of fire is normal. Known within the population of the locality in which it occurs, fire is identified through different trends and normative curves. The FRS, for instance, produce information on where fires occur most frequently, the distance of fire location from the location of FRS resources and the normal times it takes for the service to arrive at a specific location. Response standards can be established, then, because the FRS responds to fire every day. Response standards might be understood then as normative expectations for response. These standards are crafted in alignment the normative understanding of fire. In turn, response standards enable the FRS to prepare for, and mitigate in the consequences of, fires in the future.

As noted in the IRMP, preparing response through standards only accounts 'for the first fire engine we send, and ... the time from the moment it is mobilised to its arrival at the incident' (2011, 8). Establishing response standards is only part of the overall strategy of response. Response also refers to the actions of FRS personnel in attempting to mitigate the consequences of a fire at the scene of a fire. New forms of strategic decision making are enacted in this incarnation of response. Specifically, staff must consider how to tactically approach the unique set of developments which may unfold at an incident. Although referring to interventions made by the FRS in the real time unfolding of an incident, response here is still planned in anticipation of fires.

As I comment on in more depth in chapter eight, response at the scene of an incident is configured initially by guidelines called Standard Operating Procedures (SOPs) and Generic Risk Assessments. SOPs

guide the action of FRS personnel at the scene of an incident. SOPs established in anticipation of fires within particular kinds of buildings, for instance, will be drawn upon by staff to make decisions regarding whether or not a fire should be fought from outside or within the building. Generic Risk Assessments, on the other hand, structure response in accordance to how a fire might develop through an assessment of the contents of particular buildings. In responding to fires at refuse sites (2011), for example, Generic Risk Assessments dictate that FRS personnel should be mindful of potential explosions caused by landfill gas.

Prepared in anticipation of fires at specific sites, these guidelines predetermine how response should be enacted at the time of an incident. However, response preparation must also be sensitive to the potential for further unforeseeable developments in the real time unfolding of a fire. To this end, personnel are trained in exercises to practice what is called Dynamic Risk Assessment. These Dynamic Risk Assessments encapsulate the decision making processes of FRS personnel in adapting to unforeseen events within a fire incident. I investigate the creation of Dynamic Risk Assessments through exercises in chapter eight of this thesis.

I stated above that response standards sought to predetermine and automate the strategic interventions the FRS makes in regard to potential fire incidents. In responding to an incident in its real time unfolding, the ability to align resources to risk in an automated way is fundamentally challenged. In contrast to response standards, the guidelines of SOPs, Generic and Dynamic Risk Assessments must seek to incorporate uncertainties around a fire incident's development into the strategic architecture of the FRS. With response at the time of an incident, intervening in the present to secure the future is a task which must negotiate with uncertainty around the future. As I argue in chapter eight, the FRS's use of exercises to imagine potential fire incidents is crucial for the development of response protocols which are applied as fires occur.

Within this thesis, I also examine the FRS's prevention strategy as a component of governing through risk. As seen in chapter two, the term prevention has been ever-present since the inception of the service. Prevention regulated the use of specific building materials to stop fires from occurring. I now turn to show that what prevention entails is different in the contemporary. The first Act to address the FRS in the aftermath of 9/11, *The Fire and Rescue Service Act* (2004), states its intent towards developing prevention strategy by claiming that: 'The Act puts prevention at the heart of what the Fire and Rescue Service does' (2004, 1). Along with protection and response, prevention has risen to prominence as a means by which to enact anticipatory forms of governance in the FRS.

As with strategy across an ensemble of organisations enacting anticipatory governance, prevention strategy in the FRS might be said to attend to the future by intervening in the present to direct the future in a way that enables normative continuity. As Anderson notes then, decision making seeks to enact prevention strategy 'before the identified threat reaches a point of irreversibility' (2010a, 13). Prevention in the FRS is enacted through what are referred to as Home Fire Safety Checks (HFSCs). These HFSCs involve members of the FRS's Community Safety Team visiting domestic premises. HFSCs are comprised of three different activities. Firstly, HFSCs seek to ensure that households have the capacity to detect fires by installing smoke alarms. Secondly, members of the Community Safety Team educate residents about fire safety in the home by, for instance, offering advice on how to operate domestic appliances safely. Lastly, HFSC's implement escape plans for residents should a fire occur. Through HFSCs overall, the FRS makes preventative interventions which take place in the present but are directed towards the future.

That which the FRS secures against fires through prevention is human life. The governance of human life through prevention in the FRS resonates with how prevention is enacted across a wider assemblage of security agents. If the counter-terrorist CONTEST (2011) strategy is scrutinised, for instance, it is

apparent that prevention is enacted on the future through intervening directly on human life. In CONTEST, prevention encompasses a number of strategies; from detaining terror suspects to deporting individuals identified as a risk to public safety. Similarly, prevention in the FRS is specifically centred on knowing and intervening upon human life to stop fires occurring. Prevention will be enacted through identifying those within the human population deemed most vulnerable to fire.

As a strategy of prevention, HFSCs are deployed in accordance with 'the analysis of previous incidents, and the information we know about the vulnerability of different people' (2011, 6). As I discuss in chapter seven, analysis undertaken through software called MOSAIC allow HFSCs to be targeted to those who are deemed vulnerable to fire. Dependent on how the FRS seeks to 'technologize the threat' (Collier et al 2003, 5) through MOSAIC, prevention strategy attends to risks through knowing human life by particular coordinates and making interventions within these populations. Human life must be known here in a way that enables preventative interventions. As prevention is enacted in anticipation of fire, human life must be rendered as an object of governance according to its vulnerability to fire risk.

By introducing the strategic architecture of the service, this section has described the modes of intervention which enact governing through risk in the contemporary FRS. Strategies of the same nomenclature as previous eras have been transformed in terms of how they are deployed in the contemporary. Although still accepting the inevitability of fire, new preparedness measures inform response .Thus response standards seek to automate the mobilisation of FRS resources in anticipation of fire. With SOPs, Generic and Dynamic Risk Assessments, the FRS seeks to prepare for the inevitable uncertainty around the development of fire incidents. Strategic shifts which bring the FRS into effect before fires occur are also found with prevention. With protection attending to the built environment, prevention has become the technique through which the FRS governs the relationship between fire risk and human populations. As a strategy which attempts to curtail fires before they unfold, I argue in

chapter seven that the redeployment of prevention carries with it new renditions of governed subjectivity. Under governing through risk, both response and prevention are enacted in the present but in a way directed towards, shaped around, and justified by, projections of the future.

3.5 Conclusion

Following the genealogy of fire brigades and fire governance in chapter two, I have discussed in this chapter how fire, fire governance and the FRS in general are problematised in the contemporary. Various ways of capturing fire's potential were evident through the history of fire brigades. Predominantly, knowledge on the potential of fire was harnessed to inform response as and when fires occurred. Although efforts were made to understand fire by its potential, intervention was enacted at the time of a fire's unfolding in the present. In this chapter, I have showed that the contemporary FRS is underpinned by a new problematisation of fire governance. The contemporary problematisation of the FRS is best described as governing through risk. I use the term governing through risk to explore how crucial fire risk identification and conceptualisation is to the contemporary FRS. Governing through risk means that projections of fire risk now arrange the FRS organisationally, shape the interventions the FRS make in the present and justify the very existence of the FRS.

With reference to the *Fire and Rescue Services Act*, I initially demonstrated how the anticipatory modes of governance now found in the FRS arose in response to a new risk climate ushered in by events in the early twenty-first century. Although catastrophic, these events were opportunities to invent and develop new ways to govern the future. The emergence and consolidation of governing through risk shows how the FRS have appropriated new techniques of governance and applied these techniques to the risk of fire. Rather than possessing catastrophic potential, fire is an everyday risk. I showed how fire occurs on a daily basis and, as such, can be known through trends and normative curves.

I then turned to assert that, along with being an everyday risk, fire is understood to be determined by

local population factors distributed differently across the country. By outlining how fire is

conceptualised as a locally determined risk, I elaborated upon the first component of governing through

risk in the FRS. I claimed that how fire risk is understood to prevail functions to shape the organisational

arrangement of the FRS. As fire risk is determined by locally determined factors control of the FRS is

diffused to disparate sites across the country. In Foucault's terms (2007), the arrangement of power

relations which coordinate the FRS can be described as governmental.

Assimilating to how fire risk is perceived, the disparate arrangement of the FRS is supported by the

precedents of the *Localism Bill*. The *Localism Bill* is also integral to engendering other components of

governing through risk. The *Localism Bill* makes risk identification the means by which the existence of

the FRS can be justified. Alongside this Bill, auditing and accountability have risen to prominence and

become key institutional practices in the FRS. Auditing serves to maintain the disparate arrangement of

the FRS by implementing central government sanctioned, over-arching strategic goals for individual FRSs

to strive towards. On the other hand, accountability supplies the FRS with a platform to legitimate the

funding it receives. I examined accountability with reference to FRS spending reviews. Through spending

reviews, the FRS displays the continuing prevalence of fire risk and thus demonstrates the continuing

importance of fire governance. Through accountability, furthermore, the FRS elaborates upon how fire

risk would amplify if it were not for fire governance. Accountability shows risk identification is thus

crucial to justifying the existence of the FRS.

In the last section, I outlined another component of governing through risk. Governing through risk

transforms how the FRS strategically intervenes on fire. In the contemporary, strategy is enacted

through a particular relation between present and future. Under governing through risk the FRS

intervenes in the present in a way that is shaped around, justified through and directed towards visions

of the future. My argument was sustained by introducing what I call the new strategic architecture of the FRS. With this strategic architecture, I introduced two strategies which I scrutinise at length in later chapters. These strategies are response and prevention. As the last chapter attests, the strategic architecture of the contemporary FRS appears under the same nomenclature as in previous eras. In terms of the interventions they formulate, the meaning of these strategies has been completely rearticulated under governing through risk. Put simply, these strategies have been transformed into anticipatory modes of action.

I initially discussed how response is actioned under governing through risk. I exhibited how, as a preparatory device, response has bifurcated. Through the notion of response standards, response works upon the time it takes the FRS to mobilise itself and arrive at the scene of future fires. Response also works to configure and establish protocols for FRS personnel in preparation for fires at specific sites. I then turned to consider how prevention is enacted under governing through risk. Prevention intervenes in the present to curtail and interrupt fires in the future. With the strategy of protection governing the relation between the built environment and fire risk, prevention intervenes on human life to stop fires before they occur. The strategic architecture of the service under governing through risk enables governance of the future by intervention in the present. In the next chapter, I investigate the digital infrastructure of the FRS. Comprised of different data, analytic processes and software technologies, this digital infrastructure works to imagine, envision and calculate fire risk. By rendering fire risk an object, the digital infrastructure conditions and facilitates governing through risk in the FRS.

Chapter 4. Data and Decision: Navigating the Fire and Rescue Service's

Digital Infrastructure

4.1 Introduction

 In the last chapter, I set out and explored the contemporary problematisation of the FRS. I argued that

how the FRS rationalises its operations and conceptualises fire as an event has changed since the *Fire*

and Rescue Services Act of 2004 (2004). The contemporary problematisation of the FRS is anchored by a

new strategic architecture by which the FRS intervenes upon and manages fire. This strategic

architecture is shaped around, and legitimated by, projections of fire as a risk. Furthermore, the

strategic architecture of the service is enacted in anticipation of fire. In other words, the FRS acts in the

present to secure against fires which will occur in the future. Overall, I argued in the last chapter that

the contemporary FRS does not merely govern risk. Instead the FRS governs through risk. As opposed to

merely attending to fire, the FRS is organised around, and its existence is justified through,

representations of fire as an event of the future.

Putting this new strategic architecture into practice is facilitated and conditioned by the data, analytic

processes and technologies that the service uses to identify fire risk. I refer to this collection of data,

processes and technologies as the digital infrastructure of the FRS. In this chapter, I introduce and

discuss this digital infrastructure in a number of ways. I suggest that the digital infrastructure of the

service is comprised of different software and the multiple relations which exist between software. In

turn, I discuss that which the digital infrastructure contains or the 'stuff' of the digital infrastructure. I

then show how this 'stuff' also equates to different stages in the analytic process by which fire risk is

known and made into an object of governance. Rather than explaining the analytic process only by the

algorithmic capacities of software, I emphasise the importance of human interface with software in

guiding and generating accounts of fire risk. Lastly, I show how the analytic processes I have described are performed in the specific software that subsequent chapters focus upon.

The discussion below resonates and engages with literature that exclaims the advent of an 'information society' (Webster, 2002, 8). Seeking to avoid any epochal claims, this notion of an information society is far from being agreed upon in its implications or even its key organising factors. Indeed, what Webster calls information society is known by different names across literature including post-industrial society (Bell, 1999), network society (Castells, 1996) or an age of communication (Lash, 2002). Although containing different arguments, one common feature binds such literature together; the claim that digital data and technologies are both ubiquitous in, and crucial to, the functioning of contemporary organisations. It has been argued that data has become ever-present to the extent that it is entirely taken for granted, forming what Clough identifies as a 'technological unconscious' (2000, 31) in everyday life. For Kittler (1986, 2011), the assumed and taken for granted character of data flows and computer programmes in contemporary organisations fundamentally troubles the relationship between humans and the generation of meaningful language to comprehend the world. What takes precedence in creating a meaningful world instead are the invisible algorithmic processes of information technologies.

As I argue below, invisible algorithms, data and autopoetic software processes do play a role in the functioning of the digital infrastructure and in generating accounts of fire risk. However, risk analysis in the FRS is also reliant on the relationship between analytic technologies and analysts. In other words, fire risk projections are the product of interface between technologies and analysts. Put simply, I understand interface in this thesis as the interaction between staff and analytic technologies. As Galloway (2012) states, moments of interface are manifest in the effects they have. In this thesis, the effects of interface are present in how technologies and analysts relate to one another in shaping the

analytic process, in generating actual accounts of fire risk and in making strategic decisions on how to govern fire risk in the present.

I explore the interface between the internal mechanisms of software and analysts through a number of different discussions in this chapter. Firstly, I demonstrate why it is important to think of the collection of data, processes and software under the terminology of infrastructure. I will show that the term infrastructure properly accounts for the vital status that data, processes of analysis and software have attained in the contemporary FRS. Infrastructure also captures the interconnectivity which underpins the generation of risk analysis through technologies in the FRS. By interconnectivity, I first mean how relations between software enable risk analysis to take place. These relations are evident, for instance, by the export and import functions which exist to transport data from one software package to another. I also use the term interconnectivity to show how risk analysis is dependent on the relationality between technologies and analysts. The interconnectivity of the digital infrastructure enables crucial processes of customisation to take place. Customisation is the process by which generic, universally available software is transformed to serve the specific analytic goals of the FRS.

I then move to outline what I call the stuff or contents of the digital infrastructure. The contents of the digital infrastructure take four different forms. These forms are: data-capta-information-knowledge. Rather than merely expressing the different contents of the digital infrastructure, these forms work as a scale to trace the analytic process from the stage of data sourcing to the stage of generating knowledge on fire risk. I argue that the analytic process is characterised by the transformation of the content of the digital infrastructure from one form to the next. For example, data is first sourced then data is selected and becomes capta. In turn, capta is analysed to become information on fire risk. Some of this transformative work is undertaken by the internal mechanics of software. However, I also argue that the transformations that underpin the analytic process always involve interface between software and

analysts. Galloway states that; 'Interfaces are themselves effects, in that they bring about transformations in material states' (2012, vii). In describing how the content of the digital infrastructure moves from one form to the next, I inquire into the transformative effect of interface in a number of ways. For instance, I show how capta is integrated into software due to processes of data selection undertaken by analysts. Overall, I argue that content transformations in the digital infrastructure are the result of analysts' decision making. The decision making of analysts works to guide the analytic process by which fire risk is made an object of knowledge.

In the last section of this chapter, I introduce the four analytic technologies which are focused upon in subsequent chapters of this thesis. I show how the risk analysis that these technologies perform is dependent on two processes I have already mentioned: integration and customisation. These processes are evident, for instance, in how data is exported from one software package to another or in how software is modified to pursue the specific analytic goals of the FRS. By processes of customisation and integration, I argue that risk projections are produced in negotiation between the internal mechanisms of software and the interface of software with analysts in the FRS.

4.2 Why Digital Infrastructures?

The collection of data, processes of analysis and analytic technologies which generate accounts of fire risk and facilitate decision making on how to manage fire risk in the present comprise the digital infrastructure of the FRS. There are many reasons for my specific use of the term infrastructure to conceptualise analytic technologies and data in the FRS. Firstly, the term infrastructure properly attributes data and risk analysis technologies with the significance they have attained in the contemporary FRS. As the Chief Analyst in the service remarked, data can be understood as 'the pulse of the organisation'[57]. In its processing through different technologies, data prefigures all operations of the

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[57] Interview conducted with CPP 14/10/11.

FRS. As suggested in the last chapter, moreover, data and its rendering visible future risks are the principle means for legitimating decision making on resource allocation and shaping intervention in anticipation of fires. The Chief Analysts' analogy between data and essential processes of life is an argument found in wider literature. Collier and Lakoff (2008a) argue, for instance, that security discourses delineate vital systems upon which the existence of organisations and society itself rely. Data and risk analysis are instilled with such an essential and vital character in the contemporary Fire and Rescue Service.

The term infrastructure is thus important for describing how integral, vital and foundational data, processes of analysis and analytic technologies are for the contemporary problematisation of fire governance. The term infrastructure, however, also invokes the interconnectivity which exists between technologies. As I demonstrate in each of the subsequent chapters, the analytic technologies drawn upon by the FRS never undertake their tasks in isolation. Instead, the intersections between different databases are pivotal for generating accounts of fire risk. As Bowker and Star's research into the World Health Organisation's data collection shows, individual components of an informational infrastructure are defined as such then, by their ability to 'be rendered compatible with other systems' (1999, 108). The digital infrastructure is found 'embedded in a myriad of databases' (1999, 110) whose connectivity, in the case of governing through risk in the FRS, renders the future emergent as an object of governance.

With this emphasis on the interconnectivity of the digital infrastructure, I can inquire in this thesis not only into how risk appears in different forms in the technologies found across the service but also into the processes which enable analysis to be undertaken in the first place. As I document in more depth below, the processes to which I am referring include data sourcing, data integration and software customisation. Sourcing and integration refers to the process by which software acquires data for analysis through export and import functions which exist within the digital infrastructure. Sourcing and

integration in the digital infrastructure also enable processes of customisation. Customisation refers to the set of activities by which generic, universally available software are modified to meet specific analytic goals pursued by the FRS.

In *Gramophone, Film, Typewriter* (1986), Friedrich Kittler inquired into how language is processed, signified and performed through different technologies. Processes of integration and customisation would take place within an autopoetic digital network confined within algorithmic codes. The rise of digitally configured algorithms means, according to Kittler, that creating a meaningful language by which to comprehend the world is a task undertaken within invisible code and computer hardware rather by the inter-subjective relations which exist between human beings. To an extent, Kittler's analysis resonates with the digital infrastructure of the FRS. Data sourcing, integration and customisation happen in an invisible way and, as processes, are conducted by invisible algorithms within computers. Export and import functions, for instance, exist between software to enable data acquisition. The digital infrastructure of the FRS might be likened to Thrift and French's (2002) observations concerning the presence of data recording facilities in contemporary urban spaces. Here, codes and technologies are ubiquitous but at the same time assume an unconscious, taken for granted existence.

In examining the sourcing, integration and customisation processes which allow the digital infrastructure of the service to take shape and function, it becomes obvious that departures from Kittler's argument are required. To properly conceptualise how these processes take place requires investigation of the interconnectivity not just between software but the interconnectivity between software and human analysts. In other words, my examination must inquire into the interface between human beings and the digital components of the infrastructure. As Galloway remarked earlier, interface can be seen in its effects. In this thesis, the effects of interface equate primarily to the decisions analysts make in generating accounts of fire risk. Decision making shows how analysts intervene to guide the analytic

process. I have already remarked that export and import functions exist between software to source and integrate data. However, analysts are also involved in sourcing and integration. As I show in chapter seven, for instance, the creation of risk profiles involves analysts acquiring information from fire investigation and integrating this information with information generated by software called MOSAIC. In this instance, the intervention of personnel in the analytic processes is crucial for creating in-depth risk profiles to inform the service's prevention strategy.

Interface between analysts and software is also required to customise technologies for the specific goals they will serve in the FRS. Integration of data enables processes of customisation by which technologies in the digital infrastructure can generate accounts of fire risk. As a routine found in the FRS, customisation detaches data and technologies from their internal algorithms and taken for granted status. This is because customisation refers to processes by which often generic, universally available, technology and data must be transformed to serve the specific analytic goals of the FRS. For example, the PB Views software discussed in the next chapter is acquired from outside of the FRS. This software is customised by analysts by selecting data from different software in the service and using export functions to move data selected into PB Views. Through the integration of specific data, PB Views is transformed to serve as a device for performance monitoring in the FRS. This customisation process requires the detachment and extraction of data from multiple software packages and the movement of this data into new software. Having new data loaded into it, software can now serve the specific analytic goals of the FRS. To become useful to the FRS, as the above example of PB Views shows, the intervention of human analysts is required to modify data and software.

With customisation and integration, decision making which is enacted by analysts interfacing with software is evident. I examine decision making processes involved in interface to discuss the different considerations which underpin analysis. As Bowker and Star correctly note 'all information systems are

necessarily suffused with ethical and political values' (1999, 321) because they are 'modulated by local administrative procedures' (ibid) to make databases useful for specific tasks. In subsequent chapters, I examine decision making which guides the analytic process to discuss the political complications which underpin rendering fire risk emergent. The political complications which cut across decision making in the analytic process are evident in different ways; from analysis enabling strategic decision making, to concerns within the FRS as an organisation itself and, for instance, how analytic technologies trouble principles of society organised around liberal notions of freedom.

Interface between software and analysts needs to be understood as essential to the functioning of the digital infrastructure in the FRS. The effects of interface are evident in the decision making of analysts in guiding the analytic process. Decision making does not only amount to the moment of strategic action once fire risk has been identified then. Instead, decision making is also found where human personnel necessarily interface with analytic technologies to guide the analytic process.

It is thus important to think of the collection of analytic technologies, data and processes of analysis as a digital infrastructure. Because they both facilitate and condition a governing rationale and set of operations that rely on projections of the future, I have labelled data, analytic processes and software as the digital infrastructure to denote the essential importance they assume in the contemporary FRS. Simultaneously, infrastructure opens up for consideration the interconnectivity between different technologies and the processes different technologies perform together such as sourcing, integration and customisation. Extending Aradau's (2010) use of the term in relation to counter-terrorism discourse, infrastructure also plays a crucial role, however, because it does not undermine the role of analysts and other personnel in the processes of rendering futures governable through data. The term infrastructure instead allows for consideration of the role of analysts in rendering fire risk emergent.

4.3 The Stuff of Digital Infrastructures

In the last section, I argued that the collection of data, technologies and analytic processes found in the

FRS are best understood as a digital infrastructure. The next section outlines the specific analytic

technologies within this digital infrastructure[58] and demonstrates how each technology facilitates

decision making on different elements of the strategic architecture of the FRS introduced in the last

chapter. Before this section I will outline what the digital infrastructure actually contains. I refer to these

contents as the stuff of the digital infrastructure[59]. Within the FRS at least and seemingly within other

organisations (Brinklow, 2004), this stuff can be divided into four inter-related forms of data- capta-

information- knowledge.

These forms which best capture the stuff of the digital infrastructure are synonymous to different stages

in processes of risk analysis. Data-capta-information-knowledge work as a scale by which to trace the

development of the risk analysis process; starting with the point of sourcing data through to the

production of knowledge on fire risk. The transition from one stage to the next is a product of the

ongoing interface between analysts and the internal mechanic functioning of software. The

transformations from data to capta or from information to knowledge, then, are the result of decision

making which guides the analytic process.

 As I noted in relation to Thrift and French's (2002) work, data are ubiquitous and taken for granted in

everyday life. This is certainly the case for the FRS, with the Chief Analyst seeing data as the pulse of the

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[58] The analytic technologies focused on in this thesis do not comprise the entire digital infrastructure of the FRS. There are other technologies such as CFRMIS, IRS and OSHENS which are integral to this infrastructure. Throughout the thesis, these other technologies will be discussed but only as supplementary devices to the other technologies.
[59] I use the term stuff to describe the contents of the digital infrastructure for reasons primarily relating to the fleeting, malleable and indeterminate materiality of the contents of the digital infrastructure. As I will demonstrate in this section, the contents of the digital infrastructure include numerically codified data. At the same time, that which plays a role in the analytic processes of the digital infrastructure includes the experiential knowledge of personnel, existing only in personal or collective memory. As the contents of the digital infrastructure are equivalent to stages in the analytic process, the materiality of that which resides in the digital infrastructure changes all the time. The contents of the digital infrastructure changes from data to capta and then into information and knowledge. Related to its changing form and varied materiality, the contents of the digital infrastructure is nomadic. The location of contents changes from one database to another in the digital infrastructure, occupies many databases simultaneously or, as in the case of experiential knowledge, might not reside in a database at all.

organisation. It is not an overstatement, then, to agree with Dodge and Kitchin's remark that data have become 'the *essential* referents for governing agencies and institutions for managing and monitoring populations' (2005, 852, my brackets). Not only does data attain a ubiquitous presence but data are the crucial means by which power can be applied in the contemporary.

In this thesis, I understand the term data as a mediary which allows human beings to recognise, and sensually engage with, the external and physical world which surrounds them. Data, for the purpose of this thesis, refer to humans' quantification of external objects in the world. This quantification comes in measurements of space and time in unit fashion. In turn, these units are consolidated as facts or laws by which humans makes sense of the world. Processed through risk analysis technologies, data can be harnessed to make sense of the future of the world.

Dodge and Kitchin (2005) suggest that the type of sense making codes and units of data enable might be best described as identification. Codes of data isolate objects and differentiate objects from one another. The example given by Dodge and Kitchin is that of a bar-code. By assigning unique numerical codes to individual objects, bar-codes allow objects to be identified, traced and managed. In this thesis I understand data as the unified, codified quantification of the world. By making sense of the world, data can be used by the FRS to identify fire risk in various ways.

Data are sourced in a number of ways by the FRS. As Burrows and Ellison (2010) show, the data of bar-codes are traced and collected by various forms of smart technology. Increasingly, these smart technologies are a major source of data for the FRS. This is particularly the case with the appearance of smart technology in the MOSAIC database discussed later in this chapter. The sources used in the FRS, nevertheless, are various, disparate and extend beyond smart technologies. These sources encompass both the data collection facilities of government and those of private companies. Along with the

databases of the commercial credit checking company Experian[60], demographic data used in the FRS, for

instance, are regularly updated by the acquisition of survey results from the Office of National

Statistics[61]. Similarly, the Ordinance Survey supply updated data on demographic changes in regions

every six months. Furthermore, the FRS also has its own data collecting facilities in place. Data

concerning fire incidents are recorded on an ongoing basis through the Incident Recording System (IRS);

the central data storage facility in the FRS. As mentioned in the introduction to the thesis, IRS is crucial

for all software deployed by the FRS because it is the only source of data on previous fires which the FRS

has attended.

Perhaps the best way to capture the complexity of data codes and units is by describing data according

to three characteristics of form, recognition and granularity. Form refers to the numerical arrangement

of the codes in which data are embedded. The form that data come in can be found in the length of

codes. For a barcode or credit card, this form is very long owing to the sheer mass and increasing

number of things which need identification from one another. For geographical co-ordinates, the forms

of code are more stable and shorter because they designate a definite and limited space. This matter of

form is entangled with the level of granularity which data possess. Granularity refers to the level of

depth at which data identify a particular object. The granularity of a credit card code is highly detailed

because it identifies specific individuals and renders people distinct from one another. The granularity of

spatial data, alternately, can be understood as multi-scalar because data refers to different levels of

depth in accordance with the size of space identified. The granularity of a post-code, for example, would

be considered more in depth than that of a whole region. Lastly, data can be understood by different

levels of recognition. Recognition refers to the institutional, geographic and temporal parameters within

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[60] Experian is the credit checking company that sells the MOSAIC database. MOSAIC is used in the FRS for risk profiling purposes. As will be discussed in more depth in this chapter and later, the sources used to acquire data are vast, ranging from both private and public government sources.
[61] The FRS receives survey updates from the Office of National Statistics every six months on changes to the demographic makeup in their area of operation.

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which data can be comprehended. For instance, data from large scale government or commercially generated surveys attains universality because this data can be comprehended by different organisations at the same time. Conversely, data generated from within the FRS are less understandable outside of its immediate organisational confines[62].

I have introduced the initial stuff of the FRS's digital infrastructure above. As I document later in this chapter and throughout the thesis, multiple strands of data exist within the infrastructure and have an array of different referents: from geographical co-ordinates and fire incident numbers to codes identifying populations. Where data become significant for the purposes of the specific analytic technologies found in the FRS, however, is in its transformation into capta. Capta refers to the state of data once it has been reduced to an 'efficient scale for the production and sharing of useful intelligence' (Gandy, 1993, 55). Returning to Dodge and Kitchin then; 'capta are units of data that have been selected and harvested from the sum of all potential data' (2005, 853) due to their relevancy for the particular tasks and aims of analysis.

Capta are data, then, as they appear in reduced mass in different analytic technologies deployed by the FRS. The arrival at the stage of capta is underpinned by processes of selection. What these processes of selection depend on, initially, is the question of what data are considered pertinent for the needs of different types of analyses undertaken by different technologies. The extraction of data from the service's central data holding facility, introduced above as IRS, into specific analytic technologies exemplifies this process. IRS contains data on a hundred and ninety-eight different aspects of all fires attended by the service. Each fire incident has its own incident identification number accompanied by data on the time at which the fire took place, the type of property affected, the geographical co-ordinates of the fire and the extent of damage along with over a hundred and ninety other data strands.

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[62] This data will serve, for instance, to designate particular equipment the service has at its disposal. As such, there is no need for the data to be comprehendible outside of the FRS.

From the mass of data stored in IRS, analytic technologies acquire the capta they need to operate. In the case of risk mapping software, spatial co-ordinates will be imported whilst data on the name of the individual alerting the service to the fire, for instance, will not.

To some extent, the emergence of capta from data is reliant on processes which are obfuscated from analysts in the FRS and conducted by invisible algorithms[63]. In Kittler's words, transformation from data to capta would be determined by the 'discursive channel conditions' (2011, 32) of the algorithms within the digital infrastructure itself. Algorithmic codes are written to pre-determine what kinds of data are pertinent and what are not. The foundation for analysis which data provide is structured by the binary rules and conditions of technologies. Data will then be transferred from different storage facilities into specific technologies by export and import functions. In these cases, decisions concerning what is important or pertinent for analysis in the FRS is always already there and pre-existent, embedded within algorithmic code itself.

Decisions around selection and thus the transformation of data into capta are not only performed by the algorithms of software. Selection is also a type of decision enacted in interface between software and analysts. Capta, then, is an effect of interface. In many cases within the later chapters of this thesis, analysts select data on the basis of its pertinence for analysis. In chapter eight, I describe how data are created by staff and uploaded into Particle Illusion software to envision the development of potential fire scenarios. The matter of selection, however, does not necessarily revolve solely around the pertinence of data. Instead, selection might be influenced by wider political or organisational factors. For instance, in chapter five I explore how and why specific data are uploaded into the PB Views performance monitoring software. I argue here that data selection is motivated in the case of PB views by wider organisational contestations around the function that performance monitoring has in the FRS.

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[63] Although invisible from analysts in the FRS, these algorithms are written by the designers of the software. As such, interface is always evident in enabling the transformation from data to capta. For the purposes of the research aims of this thesis, the emergence of capta appears as invisible to analysts in the FRS.

The next stage in the analytic process is the transformation of capta into information. For Dodge and

Kitchin (2005), the emergence of operable information relies on the convergence of selected data, its

localisation within a specific analytic technology and the processing of data towards the specific analytic

purpose such technology serves. The generation of information by technologies works to offer

representations of the future in a number of ways. For instance, I show in this thesis how graphs, risk

maps and the audio-visual envisioning of potential fire scenarios are generated through software. These

expressions of analysis offer meaningful accounts of fire risk.

Although generated by software, the various textual representations of fire risk are always mediated by

interface. Interface shows its effects in terms of how this information is assessed, verified or even

manipulated. An example can be taken from MOSAIC software discussed in chapter seven. Through

mapping technologies, MOSAIC gives a predictive account of the spatial distribution of lifestyles judged

vulnerable to fire risk. However, the spatial distribution of lifestyles contrasts with other mapping

techniques which show the distribution of previous fire incidents as recorded in IRS. The analyst is thus

faced with contradictory information on where fires are most likely to occur. What information is

trusted depends on the decision making of analysts. In the case of MOSAIC, the interface between

software and analysts will lead to decisions about where the FRS targets its preventative resources. As

Lash would claim, then, data and capta transform into information: 'at the interface of the environment

on the one hand, and the interface of sense-maker and his/her attached information and

communication machines on the other' (2002, 18). Whilst data exists in numerical, quantitative unit

form and distinguishes between different objects, the meaning bestowed on such objects is a matter of

interface between analysts and software. As shown in the example of MOSAIC and where preventative

interventions should be targeted, interface is complicated by a host of political questions.

This necessary intersection between algorithm and analysts is again evident in the last form the content of the digital infrastructure can take: knowledge. Returning to Dodge and Kitchin, knowledge represents the accumulation of information. Knowledge arises at the point at which various 'fields of information are combined' (2005, 854) within databases. For Dodge and Kitchin, knowledge is the consolidation and acceptance of the meaning information attributes to something.

Although important to highlight these facets of knowledge, Dodge and Kitchin's definition of knowledge only accounts for software generated analysis. Knowledge is understood by Dodge and Kitchin in a way that is overly limited for the purposes of this thesis specifically because the authors' definition excludes forms of knowledge that exist outside of software. In the FRS, knowledge must also include the experiential knowledge of staff alongside the combination of information generated by software.

The knowledge of staff derives from the experience of daily life within the FRS, both in terms of attendance at actual fires and in experience of generating accurate risk analysis. This experiential knowledge is manifest in the analytic process by its contribution to the projection and analysis of risk and how projections of risk enable the FRS to reappraise the deployment of strategy. I describe throughout subsequent chapters how experiential knowledge can intervene in the production of information on fire risk. Due to its capacity to imagine that which evades software generated analysis, I show in chapter eight how experiential knowledge is the most important means for instigating exercise scenarios. My definition of knowledge, then, includes both the intersection between different forms of software information and the experiential know-how of personnel within the service.

Data obtain constancy in the contemporary FRS. Data are continually present and are drawn upon to formulate governing strategies. What the transformation from information to knowledge shows, however, is that the meaning attributed to data is an effect of the interface between software and the experience of personnel. Software generates information on fire risk. However, this information only

becomes meaningful, accepted and acted upon strategically as a result of its combination with the experiential knowledge of FRS staff. Knowledge emerges at the point at which software information interfaces with personnel and the experience personnel hold about how analysis can be used to generate accurate accounts of fire risk and thus inform strategic decision making.

In outlining the meaning of data, capta, information and knowledge, I have drawn out the various forms that the stuff of the digital infrastructure takes. The risk projections which facilitate strategic decision making in the FRS are dependent on the processes which carry and transform the stuff of the digital infrastructure from one stage to the next. I have argued that these processes of transformation require different levels of interface between analysts and software. Studying the interface between personnel and the technological components of the digital infrastructure, decision making must be understood as an effect which guides the analytic process. For data or capta to become information and to be given meaning, for instance, analysts must verify the risk projections made by technologies or choose between conflicting accounts of fire risk. In the next section, I outline the different analytic technologies which are focused on in subsequent chapters. I discuss these technologies with particular reference to both the data they draw upon and the processes which underpin the generation of risk projections. These processes are not confined merely to a discussion of algorithms. Instead, these processes are examined with reference to the deploying of analytic technologies in the specific organisational context of the FRS and how technologies are customised to meet particular needs through interface with analysts.

4.4 Integration, Customisation and Interface: The Analytic Components of the Digital Infrastructure

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By its integration into, and processing through, various analytic technologies the stuff of the digital infrastructure works to render fire risk emergent and governable. Subsequent chapters focus on four of the analytic technologies found in the digital infrastructure. Through the risk projections they generate, these technologies facilitate and condition strategic decision making on how to govern fire risk. In this section, I introduce the analytic technologies most important to the strategies deployed under governing through risk.

As I have argued throughout the chapter, renditions of risk are not solely undertaken by software in an auto-poetic way. Nor can the analytic technologies generating risk analysis be considered in stable isolation from one another. Instead, risk projections rely on the interconnectivity of the digital infrastructure. The interconnectivity of the digital infrastructure can mean different things. Firstly, I use interconnectivity to show how important data sourcing and integration is to generating accounts of fire risk. All of the analytic technologies I discuss acquire data from multiple sources. Sourcing and integration is achieved both through import and export functions between technologies and through the selection of data by analysts themselves.

Processes of integration are not the only way I understand interconnectivity. By interconnectivity, I also show that the relationship between analysts and software is crucial to fire risk analysis. In other words, the generation of accounts of fire risk is produced as an effect of interface. Following on from the process of integration, I argue that the interconnectivity between software, and the interface of software with analysts, allows for the customisation of analytic technologies. This process of customisation refers to the way in which often generic, universally available technologies are modified to pursue the specific analytic aims of the FRS.

In the FRS, both data and the analytic technologies data are processed through are acquired from multiple sites. As I demonstrated earlier, the sources of data are internal to the FRS itself, within wider

government and are also a host of private companies. In *Speculative Security* (2012), de Geode brings attention to the use of privately developed commercial databases in facilitating counter-terrorism practices of prevention. For de Goede, the efficacy private companies now exert in offering mechanisms which facilitate anticipatory governance challenges accepted assumptions about where the authority to govern actually resides in the contemporary.

The interaction and oscillation between private databases and public authority has underlying significance for many of the analytic technologies discussed at length in this thesis. With the deployment of the MOSAIC software, for instance, it is interesting to note that much of the data used by the FRS is framed within spatial parameters of the post-code. Although this data on the characteristics of specific post-codes is sold to the FRS by a private company called Experian, Lyon's (2003) work shows how such data could not exist at such a level of granularity if it was not for the invention of post-codes by the British government in the 1960s. In rendering explicit this transfer between public authority and private enterprise, the focus of this section differs from the line of argument developed by de Goede. Instead of focusing on where data and technologies used to enable new modes of governance derive from, it is more important for the purposes of this chapter to note, as Lash (2002) does, the dis-embedded nature of informational flows. For Lash, information circulates and is appropriated in different ways across spaces. Extending this notion of dis-embeddedness, I argue that the digital infrastructure of the FRS is involved in processes of customisation which appropriate and direct different data and analytic technologies to fulfilling the specific aims of the FRS.

Chapter five is dedicated to the PB Views database. In contrast to other technologies discussed in this thesis, PB Views is not deployed in the FRS to work upon a single strategy. Designed by the Actuate

software company[64], PB Views instead renders operable the reflexive turn that governing through risk engenders in the FRS. As I argued in the last chapter, the practices of auditing and accountability are crucial to governing through risk. Accountability and auditing shape the FRS around risk and allow risk projections to justify the existence of the FRS and the interventions the FRS make in the present. PB Views allows the FRS to reflect on its own performance and, as such, PB Views performs an auditing function. Containing data on all aspects of the FRS's performance, PB Views gauges how well FRS strategies are being deployed and seeks to improve strategy with regard to future occurrences of fire.

The sources of data that PB Views relies on are broad. As it monitors all elements of the FRS's performance, PB Views imports data from all databases within the FRS's digital infrastructure through import and export functions. The sourcing and integration of data is immediately followed by processes of customisation. Data collected are translated and directed towards new analytic goals. This act of translation is conducted by the algorithmic coding of PB Views. Once received, PB Views articulates data in a way that shows how the FRS is performing according to trends from past to present. Translation involves the re-quantification of data in order to assess how well the service is meeting its strategic priorities.

The success of PB Views in bringing about the reflexive turn that governing through risk engenders, however, is dependent on how staff interface with PB Views and the envelopment of PB Views in the organisational context, routines and relations of the FRS. As I discuss in the chapter itself, PB Views can be understood as a mediator in the sense that Bruno Latour (2005) uses the term. PB Views is a mediator because it forges and sustains relations between different parts of the organisation. In chapter five, for instance, I show how PB Views forges relations between those monitoring performance and those being monitored.

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[64] Founded in 1993, the Actuate company sells business intelligence software to companies across the world. (See http://www.actuate.com/download/Corporate-FAQ-end-Q2FY13.pdf#zoom=100 for more)

At the same time as becoming crucial to these relations, PB Views fits the role of a mediator because it also modifies relations within the organisation in different ways. Although it facilitates strategic decision making by turning service performance into an object of analysis, PB Views can be seen to obstruct decision making at the same time owing to its injection into the day to day life of the organisation. As a performance monitoring software, PB Views becomes a source of contestation amongst staff. Contesting narratives held by staff develop around PB Views concerning its purpose and ability to assess how well personnel fulfil their duties. As I explain in the chapter itself, these contesting narratives feed into the analytic process of PB Views because they become the grounds of motivation for inputting some data at the expense of other data.

After PB Views, I move on to the Fire Service Emergency Cover (FSEC) toolkit. Designed and sold by the software company Civica[65], FSEC was introduced to all FRSs across Britain in 2004 (2008). In relation to the three pronged strategic approach outlined in the last chapter, FSEC is used to inform decision making on response. The specific area of response that FSEC informs is the mobilisation of resources and the FRS's arrival at the scene of an incident. As such, FSEC analysis works to establish those response standards discussed in the last chapter.

Decision making for optimising response standards is undertaken by examining how mobile resources such as fire engines are geographically arranged across a locality and what effect this arrangement has on the ability of the FRS to arrive at the scene of fire incidents and mitigate the consequences of fire incidents. In the words of FRS literature: 'FSEC software calculates the time that each vehicle would take to arrive at each Census output area with the FRS region' (2008, 3). This analysis allows the service to 'calculate the probable losses based on a particular set of response strategies in terms of lives lost and

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[65] Civica is an information technology company selling software products across twenty-five countries across the globe (See https://www.civica.co.uk/key-facts for more).

property costs' (ibid). FSEC thus enables the FRS to work upon potential futures by assessing the consequences of fire risk in relation to the spatial arrangement of resources responding to fires.

Although bespoke to the FRS, FSEC needs to be made relevant and specific to the particular region in which each service operates. At this point, processes of customisation can be observed. These processes of customisation are initially reliant on the integration of data from different sources. Customising FSEC to the specific region in which the FRS operates is achievable partly by the import functions FSEC possesses with other databases. Acquired from the Ordinance Survey and the Census, regions are segmented into output areas [66]. Demographic and topographical data are found within these output areas. Customisation is taken further by data sourced from IRS. Specifically, fire incident data are selected from IRS to plot the spatial distribution of fire incidents across different output areas on a map.

It is through import functions in FSEC that data can be acquired. Once integrated, data customises FSEC for the FRS. To meet its analytic goals, however, FSEC continually requires interface with personnel. The analysis FSEC performs can be called hypothetical and iterative. Plotting the current arrangement of resources in relation to the current distribution of fire, a Base-Case or normative understanding of risk management emerges.

This Base-Case shows how well response strategy currently operates and the effects of response capabilities in terms of the consequence of fires. Analysts then hypothetically reallocate resources to gauge how response standards might be improved. Through interface with the decision making of analysts, FSEC then reconfigures fire distribution and the severity of fires according to the hypothetical changes made to the location of resources. Rather than relying on the internal algorithmic processes of FSEC, interface with personnel is crucial to the analysis. The projection of fire risk and how to deal with

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[66] Census output areas are used to divide spaces into clusters which are homogeneous according social variables such as household size but also geographical ones such as urban/rural divisions and the existence of main thoroughfares for traffic (See Changes to Output Areas and Super Output Areas in England and Wales 2001-2011, (2012)).

fire risk strategically is continually guided by the decisions of personnel in reallocating resources and the analysis FSEC undertakes once resources have been hypothetically rearranged.

The next chapter examines the service's use of MOSAIC software. This software is developed and sold by the Experian credit checking company. Of all the analytic technologies discussed in this thesis, MOSAIC is the only one to receive attention in other relevant literature (Savage and Burrows, 2007, Graham, 2005). With regards the strategic architecture of the service, MOSAIC is used to appraise and decide upon prevention activities. MOSAIC informs prevention by creating risk profiles which highlight those subjects whose lifestyles make them vulnerable to fire risk.

The analytic processes of MOSAIC and its implications for the service in terms of preventative intervention will be discussed at length in chapter seven. What is more relevant for the purposes of this chapter initially is how MOSAIC embodies claims I have made around the mass of data that are drawn upon by the FRS. Following Burrows and Savage's discussion, it is accurate to state that, through the use of MOSAIC, the FRS's risk profiling activity does not merely draw upon 'any of the usual sociological suspects-social class, ethnicity, stage of life course, gender, educational attainment... rather it (draws upon)... all of these' (2007, 891, my brackets). With MOSAIC, the FRS's decision making is made possible by the accrual and accumulation of data whose sheer amount surpasses what could be imagined in any of the previous eras discussed in chapter two on the history of the FRS.

Developed by the credit-checking company Experian, the integration of MOSAIC into the FRS' digital infrastructure is emblematic of how public authority is increasingly aided by the data collection of private enterprises. However, it is again by the processes of integration and customisation that MOSAIC can generate risk profiles. Integration and customisation serve multiple purposes in the case of MOSAIC. Integration and customisation first serve technical purposes. Thus, integration is first found where MOSAIC data on lifestyles are integrated with IRS to establish correlations between particular groups of

subjects and fire incidence. By the integration of IRS data with lifestyle data, MOSAIC can chart correlations between fire incidence and particular types of lifestyles.

Integration and customisation, however, are also processes which reflect wider political tensions which complicate the practice of anticipatory governance. MOSAIC's usage in the FRS is complicated by a wider political problem where security practices must be implemented in alignment with the notion of freedom and the privacy of governed subjects in liberal societies. In particular, this problem revolves around the extent to which specific individuals can, and should, be known and monitored by the FRS. To circumvent the problem of privacy, staff source data from investigations into previous fire fatalities and integrate this data with MOSAIC analysis. By integrating MOSAIC with fire investigation data, risk profiles can be created that accurately target those most vulnerable but in a way that does not breach privacy laws. By the complication of MOSAIC into wider political issues around the notion of freedom and privacy in regimes of anticipatory governance, the articulation and understanding of subjectivity present within the service is modified. Rather than just by their lifestyle, the question of life itself comes to constitute governed subjects.

In chapter eight, I focus on a technology called Particle Illusion. Designed by the graphic motion company Wondertouch[67], this software is used to imagine and project potential fire incidents whose complexity is unaccounted for in existing FRS response protocols. The images generated are projected within the physical space of the service's Incident Command Centre to construct new training exercises. The futures visually imagined and played out in exercises are used to assess and develop new response protocols for the FRS in addressing fire incidents that have not occurred before and thus possess increased uncertainty around their unfolding.

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[67] Wondertouch is a company that develops software for the visual effects industry including the film and advertisement industry (See http://www.wondertouch.com/index2.html?14 for more).

For the purposes of this chapter, it is important to note that Particle Illusion does not draw upon and process data in a similar way to other technologies. Deployed to explore risks never before experienced, Particle Illusion seeks to conceive of futures that are not quantifiable through the use of data and modes of calculation which might be deemed conventional in the FRS. The future that Particle Illusion imagines thus exceeds knowing by traditional techniques of data collection and processing. Instead of data which are numerical, Particle Illusion draws upon aesthetic, audio-visual data to render fire risk governable.

With this implementation of non-conventional data and technology, Particle Illusion relies on intense interface between software and the experiential knowledge of personnel in the FRS. As discussed at length in chapter eight, decision making on how to strategically govern the future through Particle Illusion is preceded by decisions on how future incidents might unfold, what they might look like and the particular types of fire risk that are most prevalent. Personnel interface and the use of experiential knowledge are ever present in the construction of exercises; from setting up exercises around particular risks to the assessment of staff taking part in exercises. Although important to enabling practices of anticipatory governance, the worth of Particle Illusion technology would be depleted if considered outside of staff interface. It is again at the juncture of interface between analysts and software that futures are visualised and strategies for governance can be actioned in the present.

In this section I have introduced and outlined the analytic technologies which I examine in subsequent chapters. By generating accounts of fire risk, these technologies facilitate and condition strategic decision making in the service and, ultimately, shape new modes of governing by anticipation. I have argued that the interconnectivity of technologies within the digital infrastructure underpins the process of risk analysis in different ways. To an extent, this interconnectivity accounts for the algorithmic design of different software. Integrating data, then, depends in part on the export and import functions between software. At the same time as the internal mechanics of software need to be considered, I

have also claimed that risk projections depend on the dis-embeddedness of data and analytic

technologies and the interface of analysts with technologies. I have shown then how important interface

is in deciding what data are selected and integrated with technologies. Moreover, interface also

manages the process of customising technology. With the process of customisation, interface shows its

crucial role in modifying technologies to ensure that the analytic goals of the FRS are met.

4.5 Conclusion

This chapter has discussed and outlined in depth the data, analytic processes and technologies which

collectively comprise what I have referred to as the digital infrastructure of the FRS. Perceived by the

Chief Analyst as 'the pulse of the organisation' this infrastructure is vital to the functioning of the

contemporary FRS. The crucial and vital role of the digital infrastructure derives from its capacity to

generate accounts of fire risk and, in turn, enable strategic decision making on how to govern fire risk.

With the exception of some instances (Dodge and Kitchin, 2005, Bowker and Starr, 1999) literature on

the incumbency of digital code and software has stressed its paradoxical character in having a

ubiquitous, albeit hidden, presence in everyday life. Some arguments (Kittler, 2011) have gone so far as

to state that the dominance of information technology has led to a fundamental fracture between

human beings and the generation of language by which to comprehend the world. I have reversed this

trend in this chapter by unearthing precisely how the digital infrastructure of the FRS operates. I have

inquired into what is contained in the digital infrastructure and the processes by which this content

transforms in establishing accounts of fire risk. Furthermore, I have examined how risk analysis

performed by specific technologies informs the strategic architecture outlined in the last chapter. In the

last section of this chapter, then, I showed how risk projections made by individual technologies allow

for an appraisal of how strategies of governance should be enacted.

Analytic technologies function to make risk projections and inform strategy because of the interconnectivity of the digital infrastructure. By inter-connectivity, I initially mean how processes of analysis are underpinned by the relations which exist between software. Over the course of the chapter, I have identified export and import functions which exist between software. These functions make the sourcing and integration of data possible. By acquiring data, software provides the foundation for analysis and instigates processes by which data turns into capta, then into information and finally arrives at the point of knowledge on fire risk.

The interconnectivity of the digital infrastructure cannot merely be reduced to the algorithmic relations established between software however. Rather, interconnectivity also expresses the relationship between software and analysts. In other words, interconnectivity has been used to examine the moments of interface which continually occur within the digital infrastructure. Interface is manifest in its effect on shaping the digital infrastructure, the analytic process and how fire risk is rendered emergent.

In terms of generating risk analysis, interface between analysts and software is as important as the relations between software. Indeed, the importance of interface is evident in the processes of sourcing and integrating data. With the move from data to capta, then, I demonstrated that the production of data that are significant for particular technologies is dependent, in part, on decisions made by analysts. In selecting capta from data, analysts can be motivated by decisions concerning the pertinence of data. In other cases, data selection is influenced by wider organisational tensions around, for instance, the function of performance monitoring in the PB Views database. Overall, the matter of selecting data shows how the decision making of analysts works to intervene upon and guide the analytic process. As I will argue in further depth in following chapters, the decision making of analysts reveal how risk analysis is complicated by many organisation, technical and political issues which arise in seeking to govern through risk.

The importance of interface suggests that processes of risk analysis are not solely conducted within the algorithmic parameters of analytic technologies. Rather than being self-referential, data and technologies are dis-embedded. It is the dis-embedded nature of the stuff of the digital infrastructure that, for instance, enables data to move from one database to another. By its dis-embedded nature, I also exhibited in the last section of this chapter how analytic technologies are customised by the FRS. Customisation captures the process by which universally available software and data, often supplied by private companies, are appropriated by the FRS and modified to serve specific analytic purposes.

Processes of customisation are dependent on both the internal mechanisms of technology and the interventions of analysts. For example, I identified export functions that FSEC holds which tailor risk maps to the specific region in which the FRS operates. On the other hand, MOSAIC risk profiles accurately highlight those most vulnerable to fire risk because of decisions by analysts to include data from fire investigations into risk profiles. Overall, the vital role that the digital infrastructure plays is one that is conducted by moments of interface between software and analysts. As I discuss in the following chapters, the decisions of analysts guide the analytic process and reveal how renditions of the future are made governable in the present.

Chapter 5. The Reflexive Turn: Apparatus, Assemblage and the Organisational

Structuring of FRS Performance

5. 1 Introduction

I argued in chapter three that governing through risk does not only change the way the FRS strategically attends to fire risk and renegotiate how the interventions of the FRS are justified. Rather, governing through risk must also be investigated by the changes it institutes in how the FRS considers itself. The strategic changes instigated by the contemporary problematisation of the FRS, in other words, are interwoven with a reflexive turn in the FRS. This reflexive turn is enveloped within, and instigated by, the consolidation of two organisational practices which take precedence in the contemporary problematisation of fire governance: auditing and accountability.

I stated in chapter three that accountability is pivotal to governing through risk because it provides a channel through which the FRS's central government funding and the strategic interventions the service makes in everyday life can be justified. Through the *Annual Spending Review* (2010), for instance, I showed how the service demonstrates its ongoing necessity in relation to the ongoing prevalence of fire risk. Accountability thus makes the service's own activity pivotal to governing through risk. It is by considering its own activity, and how this activity is attuned to projections of fire risk, that the service legitimates its very existence.

Additionally, I claimed in chapter three that auditing is crucial to facilitating and stabilising the contemporary arrangement of the FRS. The FRS is organisationally arranged from two sites. There is the central government department known as Communities and Local Government (CLG). CLG defines the broad strategic approach of the FRS through the creation of policy and legislation such as the *Fire and Rescue Services Act* (2004). It is at the local sites of FRS regional headquarters throughout the country,

however, that this policy is brought into effect in governing fire and fire risk. Through policy such as the

National Framework (2011), auditing mediates between these two sites by ensuring that the changes

established at the central site turn into practice at the local one[68]. Auditing is thus crucial to bringing the

turn to anticipatory forms of governance into effect at local FRSs throughout the country.

The reflexive turn that governing through risk both relies upon and engenders is made possible by the

digital infrastructure of the service. Auditing and accountability are enabled by performance monitoring

software called Performance Based Views (PB Views). I focus on PB Views technology in this chapter. As I

discuss in more depth below, PB Views undertakes analysis by setting up what are known as

performance indicators for each team within local FRSs. Each of these performance indicators

represents a key strategic priority of the service[69]. On the basis of these performance indicators, PB

Views gauges the service's success in meeting its strategic priorities. PB Views performance analysis

enables decision making on how to improve the strategy of the FRS in attending to fire risk.

Along with outlining how the FRS undertakes analysis and facilitates decision making on fire risk through

improvements to the performance of the FRS itself, I stress in this chapter the necessity of considering

PB Views by its situatedness both within the digital infrastructure and the complex organisational

structure of the FRS in general. Similar to Law's arguments around 'fractional coherence' (2002, 2) in

chapter one, PB Views' singular function of performance monitoring is reliant on multiple processes

taking place across the digital infrastructure. As with all other risk analysis technologies discussed in this

thesis, PB Views is rendered functional through processes of data sourcing, integration and

customisation. Peculiar to PB Views, however, is the extent to which it enters into the daily routines of

staff across the service. Rather than only engaging a small collection of teams, PB Views monitors the

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[68] The organisational structure of the Local FRS studied is given in figure two.
[69] In contrast to the chapters that follow, PB Views is not considered in this chapter by its enabling of any particular strategy in the service. Instead, PB Views is discussed more generally by how it allows the enactment of strategy found across the FRS to be monitored.

performance of all staff across the service. As such, PB Views is invested across the FRS and is engaged

with by staff in a number of ways that I will document below. By examining PB Views' situatedness

within the wider organisational complexity of the FRS, I show how decision making on how to improve

performance in the FRS becomes complicated.

The specific set of complexities which develop around PB Views and its facilitating of decision making

are conceptualised in this chapter through a synthesis of two relational constructs: Foucaultian

apparatuses (1980, 2007) and the notion of assemblages (Latour, 2005, Deleuze, 2003, 1988). Although

its application in previous literature is vast and carries multiple meanings (See Agamben, 2009), I focus

on Foucault's notion of the apparatus to discuss how multiple, heterogeneous technologies become

components engineered to meet a common, overall and singular function. Specifically I draw on the

notion of apparatus to show how PB Views utilises multiple data flows and creates new points of

intersection between staff across the FRS to make performance monitoring and analysis possible. The

integration of different data strands and the forging of relations allow PB Views to inform decision

making around what aspects of the service's performance need to be improved to fulfil strategic

priorities.

It is important to reiterate here that the functionality of PB Views does not only rely on data connections

between databases but also the relations which exist both between staff and between staff and

software. In making its singular functioning possible, PB Views shows its reliance on, and situatedness

within, organisational processes beyond its algorithmic confines and within the FRS more generally. By

its situatedness within this broader organisational context, considering PB Views merely as an apparatus

is insufficient for showing how performance monitoring facilitates decisions around how strategy should

be improved. I argue that the functioning of the PB Views apparatus must be considered within the

wider relational construct of assemblages. I hold that the notion of assemblage can better conceptualise

the myriad of poly-functional relations and processes which PB Views creates and which PB Views is reliant upon.

The notion of assemblage, furthermore, is crucial to explaining the kinds of relations, both between staff and between staff and PB Views, which are forged in making decisions on performance. In what follows, these relations are flat or 'levelled'. In other words, both PB Views and human personnel who interface with PB Views attain agency and have an effect on one another. PB Views is understood here, in Latour's terms, as a mediator (2005, 37). Following Latour's work on the notion of the mediator, I show how PB Views establishes relations to enable the performing of its function. The relations PB Views forges come in a variety of forms. Relations are forged between analysts monitoring performance and FRS staff who are being monitored. In other cases, performance monitoring creates relations between different software within the digital infrastructure along with relating different divisions within the organisational structure of the FRS to one another. At the same time as creating these relations, PB Views reconfigures existing relations. The effect of PB Views on pre-existing relations is evident in how performance monitoring generates new points of contestation between staff.

Along with enabling the reflexive turn that governing through risk engenders, I show how this reflexive turn is complicated by PB Views' situatedness within the organisational context of the FRS overall. Through the relations it forges, PB Views can monitor performance in the FRS. At the same time, PB Views becomes a hub of contestation for staff. Lines of contestation develop, for instance, around what the purpose that performance monitoring has in the contemporary FRS. This contestation can lead to inputting data into PB Views which does not accurately reflect the performance of the FRS. I argue overall that PB Views both serves to facilitate and complicate decision making on how the performance of the FRS might be improved.

In the introduction to this chapter and in chapter three, I suggested that the contemporary problematisation of fire governance instigates a reflexive turn in the FRS. By a reflexive turn, I mean that the FRS's own performance becomes a key factor in deciding how the FRS will govern fire risk and also how interventions made to govern fire risk are justified. I have stated that this reflexive turn is facilitated by PB Views technology. To an extent, PB Views can be considered a performance monitoring apparatus.

For Foucault, noting the emergence and consolidation of an apparatus requires an initial identification of the co-ordinates by which such an apparatus is put into practice. The analysis of security apparatuses would 'simply involve investigating where and how, between whom between what points, according to what processes, and with what effects, power is applied' (2007, 2). In identifying such co-ordinates, it becomes evident that the consolidation and deployment of apparatuses rests on the relationality between elements or components which occupy disparate spaces, take different forms and are involved in separate processes. In turn, these components are collected and deployed for the common, singular function that an apparatus serves.

What constitutes a 'component' within the set of relations which constitute an apparatus is broad and all encompassing. Foucault thus describes apparatuses as a 'thoroughly heterogeneous ensemble consisting of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical prepositions- in short the said as much as the unsaid' (1980, 194). The apparatus is emergent and consolidated then by multiple relations which combine not just between human beings but material phenomena and organisational policy to name a far from exhaustive list.

Although accepting the heterogeneity of its components, the apparatus is not necessarily poly-functional. As Foucault notes, the apparatus 'has as its function at any given historical moment that of

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responding to an urgent need' (1980, 195). The apparatus thus 'has a dominant function' (ibid) towards which its multiple components will be arranged and oriented. The heterogeneity of components in an apparatus must be overcome in configuring and rendering functional an apparatus.

Rather than any levelling or equality between components, the establishment of such a dominant function means different levels of authority and agency are apparent in the apparatus and that different kinds of relations between components prevail. Within apparatuses, for Foucault; 'it is possible, of course, to find lateral co-ordinations, hierarchical subordinations, isomorphic correspondences, technical identities or analogies and chain effects' (2007, 2). Examining the formation of an apparatus means examining how an apparatus is ordered by different kinds of relations which are forged between different components in an apparatus and how, through such ordering, an apparatus's dominant function is brought into effect.

Foucault thus states that different types of relations will be found within an apparatus. Wider commentary on Foucault's notion of the apparatus suggests further complications in how an apparatus will be configured by the relations between its components. The formation of an apparatus is not only a matter of capturing components and re-orienting them toward the over-arching function of an apparatus. Instead, the reverse is also important. In other words, components of an apparatus must undertake a semi-autonomous assimilation to their position and role in an apparatus. In Deleuze's commentary on the notion of the apparatus, the relations which collectively configure an apparatus are treated in terms of how a component of an apparatus 'turns back on itself, works on itself or affects itself' (1988, 161) in contributing to an apparatus's dominant function. The co-ordination and lines of relations established between components in an apparatus must be treated at the same time as 'lines of subjectification' (ibid) for Deleuze. These lines of subjectification mean that components are re-

constituted and perform their role in line with the particular functionality of the apparatus in which they are situated.

With the incorporation of components which are heterogeneous in their functioning and relations to one another, Foucault describes the apparatus as a dynamic entity whose singular function can vary over time. Foucault articulates this dynamism through two concepts which show how the apparatus might modify its function. Apparatuses can be involved in a process of 'functional over-determination' (1980, 195). Here the interdependence of components impacts on the ability of apparatuses to carry out their function overall. The withdrawal of apparatus' components or a change in a component's role 'enters into resonance or contradiction with others (other components)' (ibid, my brackets). Withdrawal of a component or a change in a component's role can renegotiate relations between components within an apparatus or can lead to the collapse of an apparatus all together. As such, the order of relations by which an apparatus is configured will shift according to the individual acts of components.

These moments of over determination are accompanied by a 'perpetual process of strategic elaboration' (ibid) where the application of an apparatus exceeds its initial function. In an interview given the English title of *The Confession Of The Flesh* (ibid), Foucault uses the example of imprisonment in the eighteenth century to illustrate this process of strategic elaboration. The extent of imprisonment in the eighteenth century, according to Foucault, gave birth to 'a delinquent milieu very different from the kind of seedbed of illegalist practices and individuals found in the eighteenth century' (1980, 195). The apparatus of imprisonment is treated by Foucault here in a way that can expand its application to the point of producing new functions. The function of imprisonment apparatuses gave birth to whole new apparatuses. Once this 'delinquent milieu' (ibid) was recognised, 'the prison operated as a process of filtering, concentrating, professionalising and circumscribing a criminal milieu' (1980, 196) from a

delinquent one which 'came instead to be re-utilised for diverse political and economic ends, such as extraction of profit from pleasure through the organisation of prostitution' (ibid).

Strategic elaboration shows how, because of the heterogeneity of its components, an apparatus can produce new functions. The emergence of new functions can lead to the breaking off and consolidation of new apparatuses. An apparatus is consolidated over time dynamically, being remade over and again but in a way that retains a dominant function at any given time.

5. 3 Apparatuses and their Secondary Matrices

In the following section I demonstrate how the definition I have offered of the apparatus above helps to conceptualise the construction and deployment of the PB Views technology to monitor performance in the FRS. I will suggest that, like the apparatus, PB Views forges new lines of relations within the FRS. These relations are found, for instance, between FRS staff members and between specific databases with the service's digital infrastructure. PB Views forges these relations, furthermore, to enact a singular function; monitoring the performance of the FRS.

The notion of the apparatus cannot, however, account for PB Views' situatedness within, and reliance upon, a wider, poly-functional set of relations which exist across the organisational context of the FRS. As I will show in following sections, this wider organisational context is important in terms of accounting for where data used for performance monitoring is uploaded from and how performance monitoring information circulates throughout the FRS. Understanding PB Views' situatedness within this organisational context is thus important for assessing how well PB Views functions to monitor performance and the ability of the FRS to take a reflexive turn in the contemporary in general. To comment conceptually on PB Views situatedness within this complex organisational context, the notion of apparatus must be synthesised with a concept which stresses poly-functionality: assemblage.

Similarities between Foucault's apparatus and the notion of assemblage can be found if assemblages are defined in their most basic form as a device for conceptualising the relations between things. This basic definition is evident in Latour's (2005) writing on Actor Network Theory at the same time as underpinning Deleuze and Guattari's writing on assemblage (2003). Further similarities to Foucault's apparatus are apparent in how assemblage thought is bound to how relations are examined in their production of a function. In *A Thousand Plateaus*, Deleuze and Guattari thus show how the production of sound is dependent on relational processes which 'unites disparate elements in the material and transposes the parameters from one to the other' (2003, 343). In the same way as an apparatus, assemblages rely on what De Landa calls 'processes of acquisition' (2006, 30) by which heterogeneous elements become compartmentalised and related to one another to produce overall effects or functions.

These processes of acquisition and the coordination of disparate elements give assemblages a dynamism which informs Foucault's reading of apparatuses. I have proposed that dynamism in Foucault's apparatus equates to perceiving the shift in an apparatus's function or the configuration of an entirely new apparatus altogether. Overall, what is emphasised with the apparatus is that, although dynamic, an apparatus can be seen to retain its orientation towards a dominant function.

In contrast to the singular function of an apparatus, the notion of assemblage recognises the ongoing poly-functionality of components. It is the continuing poly-functionality of components which underpin the dynamism of assemblages. The complexity of assemblages emphasises, as Erikson and Haggerty have claimed; 'how any particular assemblage is itself composed of discrete assemblages which are themselves multiple' (2000, 608). The relationality conceived of in assemblages does not stress how the heterogeneity of components can be overcome for the sake of an overall, dominant function. Instead, assemblages allow for an account of how the different functions of components continue side by side and intersect with one another.

The difference between the dominant function of an apparatus and the poly-functionality of an assemblage can be marked out further by returning to the question of the different types of relations which exist between components in an apparatus. As Foucault claimed, apparatuses are characterised by different kinds of relations between their components. 'Lateral co-ordinations' (2007, 2) co-exist within an apparatus alongside 'hierarchical subordinations' (ibid). Points of authority and power can be outlined which allow an apparatus to become operable and fulfil a specific, singular function.

With its emphasis upon poly-functionality, the relations between components are levelled in an assemblage. This means, in Harman's terms, that 'entities are on exactly the same ontological footing' (2009, 14) when observed through the notion of assemblage. The question of agency and authority is renegotiated in lieu of this assertion that equality exists between an assemblage's components. With an apparatus, a function is brought about by the authority one component has over another. In accounts of an assemblage, functions are brought into effect by the negotiations which take place between components.

Latour states that functions are produced in an assemblage by the role of what he calls 'mediators' (2005, 37). These mediators act to facilitate and forge relations between components and provide the grounds for negotiation to produce a function. At the same time as forging relations, the agency of the mediator itself must be accommodated for. Returning to Harman, the mediator 'always does new work of its own to shape the translation of forces from one reality to the next' (2009, 15). Although functions are brought into effect by the mediation of components, the poly-functionality and levelled conception of relations in assemblages must also be taken into account. As I will show below, the conception of relations in an assemblage opens up observation of how the functions and agency of components in an assemblage cut across one another. At the same time as assemblage functions are brought about by the

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intersection between components, these same functions are complicated by the continuing poly-functionality and agency of components.

Similarities and contradictions exist between Foucaultian apparatuses and aspects of writings on assemblage. Both concepts stress how particular functions or effects are underpinned by the relationality which exists between components. The notion of the assemblage differs from an apparatus in its emphasis on the continuing poly-functionality of components. Rather than the heterogeneity of components being subdued to fulfil a particular function as in an apparatus, the different functions of components become entangled with one another in an assemblage. This means that achieving a specific function is complicated by the continuing poly-functionality of components.

The emphasis on poly-functionality rests, as I have claimed, on the conceptualisation of agency and relationality assemblages carry. Rather than the stratified relations which exist in an apparatus, components of an assemblage are levelled and equal to one another. Processes of mediation and translation take place in assemblages which, simultaneous to enabling functions, also complicate the fulfilling of such functions.

In light of the numerous discrepancies between the two relational constructs, how, then, can apparatuses be thought to co-exist with assemblages and applied to a discussion of PB Views performance monitoring? This question is best responded to through Rabinow's formulation of assemblages and apparatuses. For Rabinow, assemblages 'are secondary matrices from within which apparatuses emerge and become stabilised or transformed' (2003, 53). An assemblage thus provides the background out of which an apparatus will emerge to perform and fulfil a particular function. Out of poly-functional assemblages, components are collected, related to one another to configure an apparatus and brought to enact a singular function.

Along with enabling apparatuses to emerge and stabilise, Rabinow argues that assemblages have a transformative effect on apparatuses. Although in breaking from its poly-functionality an apparatus can emerge, the notion of the assemblage allows for observation of how the components which configure an apparatus are simultaneously engaged in fulfilling other functions. The ability to configure an apparatus, and for this apparatus to perform a specific function, is continually rendered precarious by other functions these components possess in a wider assemblage. At the same time as making the function of an apparatus possible by providing the apparatus with its components, the assemblage complicates the undertaking of this functioning.

I have outlined in this section points of synthesis between the notion of an apparatus and the notion an assemblage. To reiterate, the components and singular function of apparatuses are emergent from the wider relations and poly-functionality of assemblages. At the same time, assemblages have the capacity to transform the apparatus and complicate the fulfilment of the apparatus's function. This is because poly-functional assemblages exist in the background to, or as secondary matrices of, apparatuses. In the next sections, the synthesis I have outlined here between apparatuses and assemblages will be drawn upon to explore how PB Views software is configured and customised in the FRS and how PB Views enables performance monitoring and decision making on how to improve performance. As an apparatus which functions to facilitate decision making, I discuss PB Views by its reliance upon, and situatedness within, the wider digital infrastructure of the service, the relations PB Views holds with staff and the relations PB Views creates between staff. I thus argue that the singular function of performance monitoring emerges out of the wider poly-functional assemblage of the FRS and the digital infrastructure. At the same time, I show how PB Views' necessary situatedness within this wider organisational context complicates the ability to monitor performance.

5.4 PB Views: An Apparatus of Performance for the Fire and Rescue Service

Designed by the Actuate software company, PB Views is the depository for all performance data on the

FRS. To take on this role of being, in the words of one analyst, the 'single point of all data on

performance'[70], PB Views must be 'connected to all sorts of resources'[71] in the service. PB Views

possesses export functions which enable data transferrals from databases across the FRS digital

infrastructure. To name a small sample of these databases, PB Views exports data from the Incident

Recording System (IRS) which contains data concerning all incidents the FRS attends, the OSHENS[72]

database which holds data on the service's compliance with health and safety measures and the

CFRMIS[73] system records the activities of the Community Safety Team.

PB Views itself is programmed by forms of algebra and tuple relational calculus which produces what is

known as Structured Query Language (SQL). The function of SQL shows how the PB Views apparatus

emerges out of a broader assemblage of databases in the FRS. In relation to the data exported to PB

Views, SQL acts as a translator. Data from disparate databases which serve heterogeneous functions

outside of PB Views are rearticulated to serve a dominant, singular function by SQL. This function is

specifically to use data acquired to gauge different aspects of performance in the service. Data are

collected from across the wider, poly-functional assemblage of the FRS digital infrastructure and,

through SQL, deployed specifically for the singular function of monitoring performance in the PB Views

apparatus.

The translation of data for the purpose of performance monitoring is envisioned textually by a pyramid

structure (see figure three) that PB Views presents on the computer screen. Built up by individual blocks,

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[70] Interview conducted with CPP 14/10/11.
[71] Interview conducted with CPP 14/10/11.
[72] The abbreviation stands for Optima Safety Health Environment Network Solution.
[73] The abbreviation stands for Community Fire Safety Management Information System.

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this structure, according to one analyst, provides 'a kind of map of the service'[74]. Conceptually, the

pyramid imagines what Law refers to as a kind of 'system' (2002, 32) by which to understand

institutional complexity. Responsibilities and performances across the service which are different and

heterogeneous can be brought into a comprehendible whole by the pyramid structure and enable

performance analysis and monitoring.

This pyramid does not show the actual hierarchical structure of the service. Instead, different blocks in

the pyramid correspond to different strategic precedents set in the IRMP (2011) of the service. At the

very pinnacle of the pyramid is a single block accounting for the service's overall vision which functions

as an assertion of the service's overarching strategic priority. This vision is creating a service which

undertakes its duties to ensure the 'Safest People, Safest Places' (2012, 1). Immediately below this block,

three blocks are found which show how the achievement of the service's overall vision is

compartmentalised into three strategic aims: 'Protecting and preventing, Developing motivated people

to deliver effectively and Value through sustainable development' (ibid). These three strategic aims are

followed by seven more blocks which serve to further compartmentalise the performance of the service

into different organisational objectives[75][76].

Once this pyramid structure is constructed, the bottom layer composed of 'objectives' blocks have a

drop down function. Clicking on any of the 'objectives' blocks will reveal different individual

performance indicators. Up to this point, the intention of the pyramid is to provide a view, as one

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[74] Interview conducted with CPP 14/10/11.

[75] Each aim is underpinned by either two or three objectives. For Protecting and Preventing, the objectives are: Identify and reduce risks, Respond effectively and competently, Define and deliver our role in the community. For Developing motivated people to deliver effectively, the objectives are: invest in the skills and potential of our people and optimise the contribution of our people. For Value through sustainable development, the objectives are: Develop an organisation that is fit for purpose and deliver value for money.

[76] Description of the PB Views pyramid was attained through textual analysis of PB Views 05/09/11.

analyst stated, of 'the golden thread'[77] which systematically connects the FRS's overall vision, its aims, objectives and the numerous activities which fulfil these objectives.

The performance indicators found underneath the 'objectives' blocks in the pyramid are the sites that data are transported to. Overall, these performance indicators give separate quantitative accounts of particular FRS responsibilities and duties which are deemed permanently crucial or of particular temporary significance for the service. Each team or station within the service are designated a number of these performance indicators. For example, one performance indicator is the number of Accidental/ Unknown dwelling fire injuries. This performance indicator reflects the performance of operative staff in responding to, and mitigating the consequence of, fire incidents. Another performance indicator is the number of Home Fire Safety Checks carried out each month. This performance indicator is used to assess the performance of the Community Safety Team who undertake Home Fire Safety Checks.

It is by the creation of this pyramid structure that PB Views establishes the foundation for performance analysis. Note that this foundation is constructed by two acts. Firstly, a heterogeneous ensemble of data, sourced from across the digital infrastructure, has been integrated through the export functions of PB Views. The SQL algorithms of PB Views have thus collected and related disparate data to enable performance monitoring and analysis. In a similar way to Foucault's apparatus, PB Views comes into being via the relations that it creates and configures with databases across the digital infrastructure.

Once these relations have been forged, secondly, data are translated and re-systematised by its positing in the pyramid structure. This translation process is exemplified by closely scrutinising what happens to IRS data when it enters into PB Views. IRS categorises data according to the specific incident it was accrued from. Data with different points of reference such as fire injuries, travel time of the FRS to respond to the incident and the location of the incident will be collated together. In PB Views this data

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[77] Interview conducted with CPP 14/10/11.

describing an incident overall will be broken down and distributed to different performance indicators. For example, if injuries were sustained during an incident, data on the injury will be uploaded into the Unknown/Accidental Dwelling Fire Injury performance indicator. Through translation, data with multiple meanings are tailored towards the specific, singular purpose of performance analysis.

The translation is underpinned by the quantitative analysis of data. Data translated as performance indicators monitor performance according to three temporal categories. Initially, a figure appears detailing how many times such a performance, in the terms used by analysts, 'has been raised'[78]. Returning to the Accidental/Dwelling fire injuries performance indicator I discussed above, the first translation will be how many times injuries have occurred in fire incidents. This actual figure for injuries sustained will be juxtaposed by a subsequent figure which dictates the target number a performance indicator should be raised. This target figure shows a division between the number of injuries sustained in the previous year against the current year. Calculating the actual figure against its target, how well a performance is being undertaken is then represented through an index score. This index score shows how far behind or beyond the actual figure is in comparison to the target figure. This index figure expresses a variance level which shows the trend of performance from past to present. By establishing this trend, PB Views calculates whether or not particular aspects of performance meet their target[79].

In rearticulating the data received according to the three intersecting temporal categories of actual, target and index, PB Views translates data and performs its analytic function. The pivotal nodes which enable translation and thus consolidate PB Views as a performance apparatus are the performance indicators. Before any data exportation has taken place, the empty category of performance indicators assumes its importance, in De Landa's terms, by its 'capacity' (2002, 32) to receive and localise data. In

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[78] Interview conducted with CPP 14/10/11.
[79] Ethnographic observation of CPP 05/09/11.

turn, data collected are made significant for the specific purposes and analytic goals of PB Views:

monitoring performance.

Reiterating the role of assemblages as a secondary matrix or background out of which apparatuses

emerge, the singular function of performance analysis that PB Views serves is dependent on PB Views'

reliance and connection to multiple databases disparately scattered across the digital infrastructure. The

relation which holds between PB Views as an apparatus and the assemblage of the digital infrastructure

is one best described through a phrase Deleuze and Guattari (2003) deploy: *agencement*. Agencement,

according to Philips (2006), refers to the act of assemblage relations producing a specific function. For

Philips, agencement shows how functions are reliant on the 'compositional unity' (2006, 109) which is

forged between the components of an assemblage. The function produced, however, must be

understood as independent from, and irreducible to, the sum of its parts. This process of agencement is

certainly evident with PB Views and performance monitoring. Although reliant on the relations it creates,

PB Views' separateness from its component parts is due to the processes of translation performance

indicators facilitate. Once this act of translation occurs, data sourced from across the digital

infrastructure is rearticulated and only comprehendible as performance data within the parameters of

PB Views itself.

The data sourcing and data translation processes by which PB Views comes to serve its analytic function

are based on the automatic, algorithmic capabilities of PB Views as a software system. Exportation

functions which transfer data between PB Views and other databases run according to the SQL

equations I described at the start of this section. In terms of data translation, the establishing of an

actual figure, its indexical relation to a target and the subsequent expression of trends analysing

performance are all calculated internally by PB Views. How PB Views analysis connects to decision

making is not simply the result of calculations however. Before decisions on how performance might be

improved can be made, I turn to the necessary injection of PB Views into the wider organisational context of the FRS. This injection of PB Views into the organisational context of the FRS shows how the translation of data into performance data is, as Ricoeur notes (2006), met by forms of resistance in the relations it establishes. Such resistance is found where PB Views mediates human relations in the FRS to facilitate decision making on performance. Along with the construction of new relations, this resistance can be found with how personnel interface with PB Views troubles the decision making process that PB Views would seem to make possible.

5.5 Contesting Narratives in Performance Monitoring

Thus far, I have examined the establishment of the PB Views apparatus out of a wider poly-functional assemblage of databases by the automatic and algorithmic mechanics of software. Multiple export functions between PB Views and other databases allow data from across the digital infrastructure to be collated. In turn, data are translated according to the temporal categories inbuilt in PB Views. This data translation enables performance analysis and monitoring. In its dependency on relations across the digital infrastructure, PB Views' function is emergent and stabilised through, as Rabinow claimed, a wider assemblage of poly-functional databases.

Rabinow, however, also claimed that apparatuses can be transformed by the wider assemblage out of which apparatuses emerge. The relation between apparatuses and assemblages can be reversed then. The functionality of apparatuses might be transformed, and complicated, by their reliance on a broader heterogeneous network of technologies.

The functioning of PB Views is complicated where the performance analysis generated is incorporation into the wider FRS organisational context where decisions on performance are made. The complication of PB Views' function is not apparent in the affect PB Views has on other databases in the digital infrastructure. Rather, PB Views operates in a mediatory fashion by creating new relations between

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personnel in the service. As a mediator, PB Views adds a new dimension to existing staff relations with the FRS. Specifically, PB Views relates analysts monitoring performance to staff who have their performance monitored.

As a mediator in relationships between staff, PB Views must be granted its own agency. PB Views does not seamlessly and un-problematically facilitate relations between human personnel based on performance monitoring. Rather, as a mediator, PB Views has an effect on human affairs. The agency PB Views acquires as a mediator is evident in the affect PB Views has on the relations it creates between those monitoring and those being monitored. The effect is evident in the way performance monitoring becomes a source of division amongst staff. I suggest that this divisive effect PB Views creates is apparent in the different narratives which develop around the perceived use and purpose of performance monitoring in the FRS. Contradictory narratives around PB Views develop to trouble and disrupt the dominant function of PB Views which is to facilitate decision making on how performance might be improved in the service.

The narratives that develop around PB Views can be seen initially by how analysts comment on PB Views. This narration does not centre on the technical capacity of PB Views successfully assess performance in the FRS. In other words, it is not the algorithms which underpin PB Views analysis that are the subject of narration. Rather, analysts claim that the calculations PB Views generates are involved in a reciprocal relation with those being monitored. Analysts undertaking performance monitoring described how the calculations that PB Views carries out might be affected by those being monitored. Conversely, analysts described how PB Views will affect the performance of personnel even before PB Views undertakes performance analysis.

Although the improvement of performance is what is aimed at, the influence of PB Views in the FRS is considered by analysts to have a detrimental effect on the validity of data processed. According to

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analysts, personnel will attempt to distort data which appears in PB Views in instances where

performance indicators are behind target. For example, as a result of 'poor performance' expressed in

PB Views, the number of Home Fire Safety Checks increased dramatically over a month. Monitoring

performance over time, analysts claimed that the number of Home Fire Safety Checks being undertaken

dropped once a period of 'good performance' was represented in PB Views. As such, the analysis

generated by PB Views has instigated a change in the performance of staff. However, this change is only

temporary. In its appearance in PB Views, the surge in Home Fire Safety Checks being undertaken was

deemed to obscure data on how well targets were actually being met over a sustained amount of time[80].

What is apparent in this reciprocal relationship established between PB Views and staff monitored is the

creation, in the terms Deleuze was seen to use earlier, of 'lines of subjectification' (1980, 161) which

emerge with the creation of new relations. Personnel in the service are constituted in a new way

through PB Views because their duties and responsibilities have been rendered objects of performance

analysis. Through the translation of data and consequent performance analysis I described earlier, staff

have been enveloped within the PB Views apparatus.

However, the subjectification of personnel within the performance monitoring apparatus is carried out

in a duplicitous way. In reacting to the expression of poor performance in the above example, personnel

have improved elements of their performance to ensure an improved representation in PB Views. It

would appear, on first sight, that PB Views has fulfilled its function of identifying poor performance and

improving this performance. Viewed over time, however, the digital representation of performance is

not sustained but temporary; in reaction to previous representations of performance. The initial

commentary of analysts reveals how PB Views and the staff it monitors mutually affect one another. PB

Views instigates an improvement in staff performance but only through the manipulation of data at

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[80] This example was given by analysts when I was undertaking ethnographic observation.

multiple organisational sites. By producing data that does not reflect performance over time, staff obstruct the ability of PB Views to inform decisions about how to improve performance.

The Chief Analyst of Corporate Planning and Performance (CPP) describes the FRS as an organisation that has 'not reached a level of maturity with regards (sic) performance monitoring'[81]. Connected to the distortion of performance data, this lack of maturity is attributed to the different interpretations which exist concerning the role and function of PB Views. These different interpretations are attached to, and correspond with, how staff define their own roles. It is the poly-functionality of the service overall, the multiple heterogeneous roles within the service, that supplies the grounds for different narratives around PB Views. For CPP itself, statistics on performance are considered an integral part of governing through risk. Performance data and analysis are, for CPP, the principle means by which the strategic architecture of the FRS can be reviewed and decisions can be made concerning whether performance needs to be improved to ensure the continued governance of fire risk.

Given its perceived benefits why, then, are data uploaded into PB Views which distorts the actual performance of the service? The narratives of other teams on PB Views can answer this question. For these teams, performance statistics are sometimes seen as a means to enhance surveillance and are a distraction from the duties of the service. Analysts show the multiplicity of views on performance software, stating that 'people have different understandings of performance, they have different understandings of how it's linked to outcomes as well'[82]. Instead of a means to assess strategy and the service in a systematic way, the translation of the service's performance into quantified performance indicators are seen, as one member of staff summarised, as a way 'to stick it to you'[83]. In turn, data in PB Views are distorted by staff in order to avoid being blamed for failure.

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[81] Interview conducted with CPP 14/10/11.
[82] Interview conducted with CPP 14/10/11.
[83] Recorded from ethnographic observation of the Community Safety Team 01/10/11.

Contradictory narratives on PB Views emerge in a way that corresponds to the different roles of staff. Performance data are seen by some staff outside of CPP as a 'blame game'[84] . PB Views is understood to explain performance not by poor strategisation or a product of organisational structure but by the activities of individuals. 'Without a doubt', claims the Chief Analyst of CPP, 'there is a culture here where people want to be perceived as performing well and they don't see that performance management can link to improvement (in more ways) than what we can say about performing well'[85]. To be sure, multiple perspectives on the purpose of PB Views exist across the service. In their limited interaction with PB Views, staff outside CPP only understand performance analysis by its quantitative expression of individual aspects of performance rather than how the organisational structure and the strategic priorities of the service conditions this performance. The pyramid structure which PB Views uses to facilitate analysis of performance is reinterpreted at different sites across the service. Strategic ends might be alluded to in the systematic functioning of the pyramid, but this pyramid is reinterpreted in a way that places responsibility for performance solely upon individual staff in some parts of the service. As oppose to the function proposed by analysts, PB Views is deemed by staff outside of CPP to single out specific individual's performance[86].

Conceptually, the instigation and stabilisation of divided narratives on performance shows how relations between humans within the service are mediated by, and levelled with, PB Views. The connection which exists between analysts and other staff through PB Views allows a reviewing of performance. At the same time as PB Views enables performance monitoring, it also mediates by creating a disjuncture or division between staff. A relation is created but, through its mediation, PB Views also becomes a source of contestation between staff.

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[84] Interview conducted with CPP 14/10/11.
[85] Interview conducted with CPP 14/10/11.
[86] Ethnographic observation of CPP 01/09/11.

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This divisive role that PB Views has in its mediation of staff relations disrupts the possibility of decision making on performance. Understood solely by its quantitative translation of staff duties into performance indicators, targets for performance are the focal points by which staff outside CPP interface with PB Views. In this interface, alternate interpretations of the purpose of PB Views and performance monitoring develop. Rather than a means by which to improve the governance of fire risk, PB Views is understood by some staff as a surveillance device. Motivated by this interpretation of PB Views as a surveillance device, staff interface with PB Views can complicate the FRS's capacity to monitor performance. As I discussed earlier, staff have been known to upload data in to PB Views which affect representations of good sustained performance. The expression that PB Views gives of performance is, thus, understood to distort performance 'on the ground'. By concerns over the validity of data, negotiations which lead to decisions about how performance might be improved are obstructed.

Understanding it as a synthesis of the notion of apparatus and the notion of assemblage, PB Views can be treated in both its construction as an apparatus and its affect on the wider organisational assemblage of the FRS. Through co-ordinating relations to other databases and processes of translation, the apparatus of PB Views is constructed and deployed towards its function of performance monitoring. However, it is in PB Views situatedness within a wider assemblage of poly-functional human agents that this singular functionality is complicated. In the next section, I expand on this dynamic whereby PB Views' functionality is both facilitated and complicated by its levelling with human agency. To do so, I focus on the specific connections between the circulation of performance information and how this information enables decision making on performance.

5.6 The Circulation of Performance Information and Sites of Decision

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I have described the emergence and stabilisation of PB Views and its function as a performance monitoring device through a synthesis of two relational constructs: apparatus and assemblage. Foucault's work on the notion of apparatus has been applied to how PB Views forges relations with other databases across the FRS digital infrastructure to source data. In turn data transferred is translated as performance indicators. The act of translation enables the dominant function of the PB Views apparatus; performance monitoring. I have described the construction of the PB Views apparatus as a process of agencement in which the apparatus and its function emerge out of the wider, poly-functional assemblage of the FRS digital infrastructure.

 PB Views does become reinvested into the wider organisational assemblage out of which it emerges however. This reinvestment is evident in the lines of contestation which develop between staff where PB Views monitors performance. The relation established by PB Views is between analysts monitoring and staff that are monitored. Contradictory narratives develop around the purpose of PB Views. These narratives motivate staff to upload data which obstructs PB Views' ability to monitor performance. Positing the apparatus of PB Views within the wider organisational assemblage of the FRS shows how performance monitoring is facilitated through sourcing and translation. At the same time, however, the function of performance monitoring is complicated by the poly-functionality of the assemblage out of which PB Views emerges.

This double bind of facilitating and complicating the fulfilment of performance monitoring also characterises how performance information circulates and informs decision making. I understand decision making not just in its strategic incarnation here; as a moment of changing how the service performs its tasks. Instead, decision making is found before the moment of strategic decision making. Specifically, decision making is manifest in dictating how and where performance information is circulated throughout the FRS. I will show that through decision making on how performance

information circulates, different perspectives on the performance of the FRS develop at different organisational levels of the FRS.

The connection between performance analysis and decision making is found where information on performance is circulated to a specific site in the organisation: the Service Management Team (SMT). Convening twice a month, the SMT is a key site for reviewing FRS performance. SMT is composed of lower and mid-level management staff in the form of Section Heads and Team Managers. Section Heads are personnel who manage a group of teams in a section who fulfil similar responsibilities. Team Managers are personnel who overlook the duties of individual teams within these sections. SMT brings these personnel together to discuss reports published by PB Views on the current state of FRS performance indicators.

It is important to note that an initial reduction of information on performance will be undertaken to define the agenda for meetings. Out of hundreds of performance indicators, only those which show indexical improvement, substantial decline or continual good practice will receive attention[87]. The quantitative translation of FRS activities into performance indicators in PB Views has a direct influence on what issues are discussed at SMT. It is through translation that particular aspects of performance will be scrutinised and subject to appraisal. By its mediating between staff, PB Views technology not only to facilitates decision but actually affects the vision of staff in deciding what specific aspects of performance need to be reviewed.

According to the specific team designated a specific performance indicator, certain personnel will be 'challenged' in SMT meetings to provide analysis on why the performance indicators appear in their current quantified state of decline or increase[88]. It is in this moment of challenging that further analysis on the performance of the FRS is evident. The analysis apparent at the site of SMT meetings exceeds the

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[87] Ethnographic observation of SMT meeting 13/08/11.

statistical trends found in PB Views. Staff offer a qualitative commentary in SMT which serves to explain

the state of performance by wider institutional processes and specific incidents which determine

statistical trends. For instance, in relation to an increase in primary fires in a particular area of the

county, a number of reasons were given to account for this increase. The Head of Operations stated that

a number of new housing developments were underway in this area. The more buildings an area

possesses, it was contested, the more likely fires are to occur. Furthermore local, experiential

knowledge suggested that the increase in fires might be the result of a repeat arson offender in the area.

The Head of Operation accompanied their explanation with a kind of cross performance indicator

analysis which related the increase in Accidental/ Unknown Dwelling Fires to a decrease in preventative

Home Fire Safety Checks. If the preventative work of the FRS decreases, it was held that fires are likely

to increase[89]. In this meeting site, performance indicators are also analysed frequently in a way that

returns to problems around how PB Views misrepresents performance. This was found most

prominently in response to challenges around the decrease in Home Fire Safety Checks. The decrease in

Home Fire Safety Checks was held not to be a problem with the staff undertaking the checks but the

export function between PB Views and local databases for recording HFSC's not functioning properly.

Although facilitated by data generated from PB Views, new forms of analysis and translation are found

at SMT which re-dress the relation prevailing between staff and statistics. Rather than being centred on

the confines of algorithmic analysis, performance is addressed in SMT from the perspective of the

experiential knowledge of staff. Descriptions of incidents challenge the analysis presented by PB Views.

Experiential knowledge intervenes in PB Views' relationship to decision. As I showed above in relation to

the increase in dwelling fires, the severity of quantitative representations of performance might be

reduced by descriptions of specific events that show how reports distort performance on the ground.

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[89] Ethnographic observation of SMT meeting 13/08/11.

Staff experiential knowledge acts to bring the authority of quantitative statements made by PB Views into question and offer an alternate argument for explaining the current state of performance.

Overall, decisions on performance will be made in negotiation between the experiential knowledge of staff and the information of PB Views. As I claimed at the start of the section, decision is manifest in two ways. From the negotiation between experiential knowledge and PB Views information, decision can mean that performance will be re-strategized for the future. Teams might be made to focus resources on aspects of performance that need improvement. For instance, fire fighters are increasingly told to undertake Home Fire Safety Checks in a way that better targets particularly vulnerable areas. This decision is a result of SMT's recognition that performance indicators note a rise in fires at the same time as a decrease in HFSCs. SMT thus identifies relations between the two performance indicators produced by PB Views in order to enact decision on how performance might be improved.

The strategic form of decision making I have outlined here is bound to another type of decision making found in relation to PB Views and performance monitoring. This other decision is found in how performance information is made to circulate throughout different parts of the institution to renegotiate the strategic priorities of different teams. Initially, the circulation of information for SMT can be imagined on a vertical scale. Once decisions on performance have been made, the reports produced for SMT will travel back to the teams scrutinised. SMT will, for example, direct the Community Safety Team to increase the number of Home Fire Safety Checks. A re-strategization of a team's key priorities will take place once information is circulated back to them with a view to improving their representation in PB Views.

In this circulation, it is possible to see how PB Views comes to re-adopt its mediating role between higher echelons of the service who make decisions and members of staff who will have to improve their performance. Between higher grade staff and staff within teams, information circulation becomes a

means by which decision can be processed and enacted. By circulating to SMT, PB Views information

enables discussion in the FRS on how performance might be changed in line with strategy. In its

circulation back to specific teams, performance information acts as a command to concentrate on

specific elements of a team's duties.

Decision making undertaken by SMT will make information circulate in another direction however.

Rather than directly and immediately impacting on performance in teams across the service, decisions

made at SMT can function as a kind of sifting through information. Decisions made on whether or not

specific aspects of performance need to be improved are accompanied by questions about who has the

authority to make such a decision. A decision is made then on if issues around performance need to be

confronted by higher levels of authority in the service. If this is deemed necessary, SMT decision leads to

an upwards circulation of information. This circulation of information facilitates decision making which

will take place at the Service Leadership Team level (SLT). SLT comprises the highest level of staff in the

service[90].

In this process of circulation, a mediatory role in the service can be attributed not just to PB Views. By

the discussions taking place, SMT acts as a mediator between teams within the service and the highest

level of the service. Decisions are made in SMT about what issues raised in performance reports will be

important for SLT to discuss. At the same time as acting as a means of communication between teams

and higher levels in the service, SMT re-constitutes how performance appears by sifting through

information. From the plethora of information received by SMT, a reduced amount of information on

performance will be circulated to SLT. Only specific performance which cannot be decided upon at the

level of SMT will be circulated to SLT. What SLT receive then, is a selected account of performance in the

service which is influenced by the negotiations undertaken at the site of SMT.

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[90] In addition to members of SMT, SLT comprises the Chief Executive Officer, the Director of Community Protection and the Director of Finance.

Placed in the wider institutional assemblage, the mediatory role SMT plays follows similar processes as that where PB Views was seen to mediate between staff in the last section. With PB Views, this meant enabling and solidifying relations within the organisation to enact performance analysis. At the same time, however, PB Views redefined relations between staff by creating new lines of contestation centred on the purpose and use of performance monitoring. By affecting information circulation, SMT connects higher levels of authority in the service with teams whose performance is being scrutinised. As a mediator, SMT consolidates relations through the circulation of information on performance. Simultaneously SMT further multiplies the perspectives held on PB Views, performance and performance monitoring in the service. This multiplication of perspectives on performance arises because decision not only refers to the enacting of strategic change in the service. Rather, decision is enacted in deciding what specific information on performance will circulate and where. As such, information circulation by SMT serves to produce new perspectives across the organisational structure on how well the service is performing and what the purpose of performance monitoring is in the first place.

5.7 Conclusion

With regard to the emergence of auditing and accountability as key institutional practices in the contemporary problematisation of the FRS, I have inquired in this chapter into performance monitoring. Performance monitoring is an organisational practice ushered in by what may be referred to as the reflexive turn in the contemporary FRS. This reflexive turn involves seeing fire risk not just as something determined by aleatory events occurring within populations that are governed. Rather, questions of how the service performs its duties become pivotal in understanding fire risk. Under accountability and auditing, the reflexive turn means how the performance of the FRS is deemed to be intimately bound to

the occurrence of fire and its possibility in the future. Performance appraisals show how the FRS should be organisationally shaped in anticipation of fire risk.

This reflexive turn finds its digital conditions of possibility in the PB Views database. PB Views functions to monitor the performance of staff across the service to gauge whether or not pronounced strategic priorities are being met. From PB Views analysis, decisions will be made about where performance needs to be improved in the service and how these improvements should take place. I have examined PB Views by its construction and situatedness both within the digital infrastructure and the wider organisational context of the FRS. I have demonstrated how PB Views creates, and is reliant upon, different sets of relations in the wider digital infrastructure of the service and with human personnel to monitor performance.

To conceptualise PB Views' situatedness within the overall organisation of the FRS, two relational constructs have been synthesised in this chapter: Foucault's notion of apparatus and writings on the assemblage (Deleuze and Guattari, 2003 and Latour, 2005). Elaborating on Law's arguments concerning 'fractional coherence' (2002, 2) I discussed in the introduction to this thesis, apparatus was drawn upon to detail the configuration of PB Views and how PB Views is able to fulfil its function: performance monitoring. Through work on assemblage, I have argued that the function of performance monitoring is conditioned by PB Views reliance on, and emergence out of, the wider poly-functional digital infrastructure of the service. Furthermore, the notion of assemblage opens up space for scrutiny on how PB Views relates to human personnel in the service.

The reading of PB Views through this synthesis between apparatus and assemblage is one that, initially, allows for commentary on how the function of performance monitoring is reliant and dependent on the wider assemblage of the digital infrastructure. I have revealed this reliance in the processes of sourcing and integration of data stored in different databases. Export functions which connect databases to PB

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Views allow data sourcing for performance analysis. Sourcing provides the basis for the translation of data into information which specifically gauges performance. Export functions and translation are carried out by SQL algorithms in PB Views.

This emergence out of a wider set of relations is paralleled, however, by the necessary investment of PB Views into human relations across the FRS. PB Views here takes on the role of a mediator. Specifically, PB Views creates relations and mediates between those analysts monitoring and staff being monitored. Where information is circulated to SMT, the analysis PB Views has generated makes the matter of performance an object of negotiation between staff. From negotiations taking place at SMT, decisions around how to improve performance can be facilitated and enacted.

Situating PB Views' functionality within the assemblage of the FRS organisation also allows for examination of the kind of relations which prevail in enacting performance monitoring. Through pre-existing literature on the notion of assemblage, I emphasised how PB Views is levelled in the relations it forges between staff. This means that, rather than merely serving a function, PB Views can be granted with its own agency. This agency is manifest in how, along with forging relations, PB Views affects and reshapes relations between human personnel in the FRS.

The affect of PB Views on staff relations within the service is evident in how performance monitoring becomes a subject of contestation between staff. As I have suggested, relations between staff are complicated by the development of contradictory narratives on the purpose of performance monitoring. For some staff, PB Views analysis facilitates the assessment of how well the service is meeting its strategic priorities. For other staff, performance monitoring functions to assign failure to specific individuals or teams. At the same time as facilitating performance monitoring, the agency which PB Views can be attributed with serves to complicate the FRS's ability to act reflexively in governing through risk. This is evident by the contradictory narratives which emerge around the purpose of

performance monitoring. These contradictory narratives also supply motivation for the manipulation of data and a subsequent misrepresentation of performance in PB Views. Where I have discussed SMT, the quantitative expression of performance in PB Views is challenged by qualitative analysis offered by human personnel. In addition, SMT's role as a mediator itself produces multiple heterogeneous perspectives on performance due to decisions made about how information generated from PB Views should circulate to different parts of the service. Along with facilitating a reflexive turn in the service, PB Views complicates the ability to makes decisions on how performance should be improved in governing the future.

Chapter 6. Milieux of Circulation: The Serial Emergence

of Risky Futures

<u>6. 1 Introduction</u>

In the last chapter, I discussed how a component of the FRS digital infrastructure, PB Views, enables a reflexive turn in the FRS. I argued that PB Views allows the performance of the FRS to become a key factor in how the FRS shapes itself organisationally around the risk in the present. In the next three chapters, I examine the way in which different risk analysis technologies condition and facilitate decision making on particular elements of the contemporary FRS's strategic architecture. Each of the strategies I discuss are enacted in the present to govern the future.

This chapter focuses on how FRS strategic decision making is enacted through risk mapping. The specific risk mapping technology I examine is known as the Fire Service Emergency Cover (FSEC) toolkit. Introduced nationally across the service in 2004, FSEC assesses the relationality between the geographic distribution of FRS resources and the normal spatial distribution of fire and fire risk. By undertaking this spatial analysis, FSEC is used to enhance the response strategy of the service. The specific element of response strategy that FSEC informs is the preparation of resources to mobilise and arrive at the scene of an incident. FSEC analysis is thus deployed to establish, fulfil and improve the response standards which I outlined in chapter three.

I argue in this chapter that FSEC makes fire risk knowable as a problem of space and circulation. Fire risk is rendered emergent by its distribution as an event across space. Through FSEC analysis, the distribution of fire and fire risk is made interdependent with the FRS's own ability to mobilise itself and arrive at the scenes of fire. In Foucault's terms, what FSEC imagines is the 'space of security' (2007, 20). How to govern is something which can be appraised and enacted by understanding the object of security by its spatial features. Building on pre-existing literature[91], Foucault argues that one specific

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[91] See O'Grady (2013).

term is central to imagining the space in which security governance will be enacted: the milieu[92]. I draw

on this notion of the milieu to examine how FSEC enables anticipatory forms of governance through

making the response strategy of the FRS a problem of space and circulation.

Through the notion of milieu, the space which security imagines and enacts itself within is defined by

two phenomena: the circulation and inter-relationality of the population within space[93]. In FSEC, these

phenomena take on multiple meanings. Inter-relationality, I suggest, refers to the spatial distribution of

FRS resources, the relation of these resources to other circulatory flows within the general population

and fire events which occur. Embedded within this imagining of inter-relationality is circulation. In FSEC,

circulation highlights the FRS's ability to travel to fire incidents. This form of circulation is complicated by

other circulations which are ongoing in space.

Circulation and inter-relationality also account for how the normative order of space is made and

remade. In the case of this chapter, FSEC envisions the normative order of fire occurrence and the

normative distribution of fire. The occurrence, consequence and distribution of fire and fire risk are

made inter-dependent with the ability of the FRS to mobilise itself and arrive at the scene of an incident.

The calculative logic which underpins FSEC's analysis, then, is that the further the service's resources are

from the geographical location of fires, the worse and more frequent fires will be. By this analysis of

circulation and inter-relationality, fire is articulated in terms of its serialised, normative distribution and

consequence across the space of security that FSEC invokes.

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[92] Foucault states in *Security, Territory, Population* then: 'The specific space of security refers then to a series of possible events; it refers to the temporal and uncertain, which have to be inserted within a given space. The space in which a series of uncertain elements unfolds is, I think, roughly what one can call the milieu' (2007, 20).

[93] As stated in chapter one, population encompasses not just human populations but human subjects in their material surroundings and the events which occur by the interaction between humans and their material surroundings. As such, elements of a population include, as in the case of this chapter, the resources of the FRS, circulatory flows and fire events.

What is grasped by FSEC's imagining of circulation and inter-relationality is the social, normative order which the FRS seeks to secure. In her work on the use of biometric technologies at borders between nation states, Amoore (2006) shows how intervention will be organised around outlining the normative mobility of individuals identified as potential terrorist suspects. Deviations from these normative travel patterns will arouse the suspicions of border agents which might lead to restrictions on an individual's permission to travel. In the case of FSEC, routine movement and circulation is used to identify the normative order of fire. However, fire and fire risk is grasped through FSEC as an event which, although embedded in circulation, serves to threaten and disrupt order. FSEC's identification of the normative order of fire simultaneously becomes, in Aradau's terms, a means of 'eliminating the materialities of reverse circulation' (2010, 580). By showing where fires occur and how they disrupt order, FSEC enables new forms of fire risk governance by making adjustments to the spatial arrangement and allocation of FRS resources.

Foucault's work on the milieu is useful for showing how circulation and inter-relationality become foundational for preparing response capabilities for future fires. Foucault's commentary on the milieu, however, must also be approached critically in what follows. I critique Foucault's argument by demonstrating how FSEC's deployment serves specifically to intervene in anticipation of the event of fire. As I argued in chapter three, governing through risk does not just mean attending to fire risk. Rather, projections of fire risk are used to organise the strategic arrangement and deployment of the FRS in the present. As such, the projections of fire risk that FSEC makes are used to prepare response by allocating resources more effectively. In seeking to know the future, the meaning and usage of circulation and inter-relationality are multiple in FSEC. In one of its analytic stages, the circulation of, and interdependence between, resources and fire is used to hypothesise about how resources might be re-located and rearranged to enable faster response to fire incidents in the future. I argue here that through their deployment in hypothetical forms of analysis, inter-relationality and circulation become

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terms which are malleable, terms which serve to show the FRS how population configurations of the

present can be manipulated and rearranged in order to secure the future. In preparing response, inter-

relationality comes to refer to the inter-changeability of resources. In turn, the rearrangement of

resources becomes a way to enhance the circulatory capacities of the FRS and improve the management

of fire risks.

6.2 The Milieu, Population and Norms in Motion

In *Security, Territory, Population* (2007), Foucault's concern with the milieu is initially in its appearance

in seventeenth century physics and eighteenth century biology[94]. As a kind of epistemological device or

model, the milieu was used, especially by biologists in this period, to conceptualise the co-existence of

different natural elements within an enclosed space. The milieu was deployed to examine how the co-

existence of different elements and their relation to one another gradually ordered the space they

mutually inhabited. This ordering or stabilisation of cohabited space was the product of the ongoing

circulations and movements which could be found.

Two things are emphasised within milieu readings of space. Firstly, the milieu facilitates examination of

the co-existence and relationality between elements within a given space. Secondly, these elements are

understood by their movement or circulation. Taking these components as the basis for milieu readings

of space, Foucault shows how the milieu as a concept was re-applied in the eighteenth century. Rather

than being solely concerned with biological questions, the milieu became pivotal to articulating newly

emergent questions around how to govern early liberal societies. Although not known specifically by the

term 'milieu', Foucault states that 'the pragmatic structure which marks it (the milieu) out in advance is

present' (ibid, my brackets) in the practice of security. As such, 'apparatuses of security work, fabricate,

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[94] Foucault states that the notion of milieu is found in Physics with Newton. However, the application of the notion of milieu Foucault concentrates on is from the work of Jean-Baptiste de Lamarck. Specifically, Lamarck's *Philosophie Zoologique* (1960).

organise and plan a milieu even before the notion was formed and isolated' (ibid).The term milieu may

not have been used, but the components by which it models space are found in the early forms of

knowledge used to securitize populations.

With its transference from biology to questions around how to secure populations, the milieu is perhaps

the icon *par excellence* of Foucault's broader concern with bio-power. Rendering the object of security

emergent through the milieu is reliant on reading populations through an object which derives from

biological discourse. Along with its emphasis on circulation and inter-relationality, Foucault states that

the notion of the milieu holds authority in early security discourse because the milieu's specific spatial

features, or 'the pragmatic structure' (ibid), by which the milieu models space is present even though

the term milieu itself is absent. What, then, are the specific spatial features or the pragmatic structures

that can be attributed to the milieu?

Foucault's most explicit use of the term milieu is to describe that which populates space or, in other

words, the population. As I stressed in the introduction, the population accounts for both human life

and the external, material surroundings in which life exists. 'The milieu' (ibid,21) for Foucault then 'is a

set of natural givens-rivers, marshes, hills- and a set of artificial givens-an agglomeration of individuals,

of houses, etcetera. The milieu is a certain number of combined, overall effects bearing on all who live in

it' (ibid). Further on in his description of the term, Foucault states that: 'What one tries to reach through

this milieu, is precisely the conjunction of a series of events produced by these individuals, and groups

and the quasi-natural events which occur around them' (ibid). The milieu thus is used to examine and

spatially model the population.

In describing how the milieu represents populations as the relations between human life, its material

surroundings and the events which occur within these surroundings, what is also invoked is the

normative order which is sustained within the milieu. As quoted above, the milieu accounts for the

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effects material surroundings and events have on human social life in a given space. Events are not considered in isolation from one another but articulated as a series which stabilise over time. Normative order is manifest by the serialised stabilisation of events in the milieu. Normative order is not conceived of statically here. Rather, series is taken to refer to the establishment of normality through the movement of populations.

In relation to the enactment of security, the milieu makes governance a matter of managing the circulations within the population. A security technique is defined here, for Foucault, as 'the regulator of a milieu' (ibid, 29), one which involves 'not so much establishing limits, or fixing locations, as above all and essentially, making possible, guaranteeing and ensuring circulations, the circulation of people, merchandise and air, etcetera' (ibid). Through the notion of the milieu, Foucault comes to an argument that many have discussed: that security equates, in part, to the management of circulation in different forms (Amoore, 2006, de Goede, 2012, Salter, 2013).

Established through movement and circulation, the normative order the milieu imagines possesses a dynamic character. By dynamic, I mean normative order is continually made and remade by the circulation of elements within a population. Rather than setting limits for normality and directing subjects towards this limit as in disciplinary power[95], the milieu shows how security operates on the basis that 'the normal comes first and the norm is deduced from it' (ibid, 63). In attending to circulations, security is enacted by continually adapting to changes in the milieu to ensure the continuity of normative order.

At the start of this section, I noted that the normative order of the milieu is not established by treating any element within a population as independent. Instead, it is the co-existence and inter-relationality of

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[95] In the passage where the dynamic character of normativity in societies of security is discussed, Foucault contrasts this establishment of order to that prevailing in disciplinary societies. As such, Foucault states that: 'In the disciplines one started from a norm, and it was in relation to the training carried out with reference to the norm that the normal could be distinguished from the abnormal' (2007, 63).

circulating elements that is observed in the milieu. It is this inter-relationality that defines another

spatial feature of the milieu. This feature equates to the position from which the milieu enables

observation of the population. It is necessary here to take a step back from Foucault's discussion and

engage, instead, with Canguilhem's writings on the milieu (1988, 1994[96]).

Canguilhem refers to the milieu as an 'interstice' (1994, 32). In other words, the milieu allows

observation of the relationality which exists in a space. Understanding the milieu as an interstice means

the relations between elements can be observed and examined by the productive function these

relations have. Canguilhem exemplifies this with reference to the geneticist Mendel and his claim that

new cells in animals are produced by the interaction between existing cells. As an interstice, events

which occur within the milieu are understood as determined by the inter-dependence between

elements.

Canguilhem's argument that the milieu allows for the study of the relations between elements and the

events which occur from this interaction is evident in Foucault's discussion of the milieu. This is

apparent, for instance, in Foucault's discussion of what may be referred to as bad circulation and events

which, although emerging from circulation, serve to disrupt normative order. As the milieu observes the

co-existence of elements of populations, disruptive events cannot be conceptualised through a logic of

causation. In other words, causes cannot be identified and separated from the effects a disruptive event

might have.

With the milieu's emphasis on circulation and the co-existence of elements, Foucault argues that a

'circular link is produced between events and causes, since an effect from one point of view will be a

cause from another' (2007, 21). Under the model of the milieu, disruptive events are conceived of by

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[96] Canguilhem's writing on the milieu is found specifically in his collection of works known by the English
translation A *vital rationalist; Selected Writings from Georges Canguilhem* (1994). Canguilhem focuses in particular
on the early genetic theory of Gregor Mendel and Mendel's work on the milieu.

their co-causality. Due to the interdependence of elements, an event must be judged by how it reconfigures relations between that which is found in the milieu overall rather than demarcating particular sites of causes and effects.

Understanding events by the logic of co-causality, decision making on how to secure is conditioned and practiced in a specific way. Interventions are made which attend not only to a specific event but in a way that accommodates for the ruptures events cause in the relations between elements of a population. Circulations and the events which occur are thus 'regulated within a multivalent and transformable framework' (ibid, 20). Security will be practiced through arranging circulations in a way to reduce the effects disruptive events will have. For example, in his discussion of how town planning was redeployed as a technique of security in the eighteenth century, Foucault shows how town planning was practiced under a new logic. Town planning became 'a matter of organising circulation, eliminating its dangerous elements, making a division between the good and the bad circulation, and maximising the good by diminishing the bad' (ibid, 18). Security, then, will seek to enhance the circulations which produce and consolidate normative order. In so doing, events which are disruptive to circulation will be mitigated and reduced. Overall, decision making is a matter of the cross management of different circulations to secure normative order.

In this section, I have discussed Foucault's commentary on the milieu. The milieu makes security a problem of space. Within this space, security is made attendant to populations and the relationality between elements of a population. Taking population to refer to human life, its existence in material surroundings and the events which occur therein, the milieu makes the objective of security the management of circulations. Circulation underpins the development, and remaking, of normative order at the same time as producing events which disrupt order. These disruptive events are understood, in both their cause and effect, by the reciprocity of elements in the population. To attend to such events

requires the cross-management of circulations to ensure that the normative order of the milieu is secured.

The emphasis in milieu readings of space on inter-relationality and circulation will now be examined in its applicability to the use of FSEC risk mapping technology in the FRS. In seeking to enhance response times and response standards for future fire incidents, I argue that governing through risk is underpinned and facilitated by envisioning the circulation of, and the inter-relationality between, elements in the population. However, Foucault's discussion of the milieu is not entirely sufficient for explaining how FSEC facilitates strategic decision making on response in the service. This is because FSEC analysis is deployed specifically to enact anticipatory forms of governance. Circulation and inter-relationality appear in FSEC in a way that will enable action on the future. As such, the terms circulation and inter-relationality take on extended usage in the contemporary risk analysis of the FRS. This is particularly the case where preparing response for future fires is achieved through the hypothetical geographical repositioning of mobile resources and predictions of the time it would take to arrive at the scene of future fires from the new geographic coordinates resources occupy.

6.3 The interdependence of Risk and Resource in the Fire Service Emergency Cover Toolkit

In chapter three I documented the emergence and consolidation of a new strategic architecture under the contemporary problematisation of the FRS. Rather than the appearance of totally new modes of intervention, this strategic architecture consists of pre-existing strategies which have been re-negotiated in the contemporary. Strategies are now formulated and enacted in anticipation of fire and moulded around what can be said about fire as a risk. The strategy of response does not escape renegotiation under the new problematisation of the FRS. Although still accommodating for when strategies such as prevention fail and thus being attendant to the real time unfolding of fires in the present, response is

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also conceived as an element of preparation in the contemporary. Response is a strategy that is formulated in the present but directed towards the future.

I outlined in chapter three how this renegotiation of response on the basis of preparation is evident in the creation of what are known as 'response standards' (2011, 8). Response standards seek to guarantee the FRS's arrival at fire incidents within a pre-determined set of temporal parameters. As the *National Framework* quoted in chapter three states then, the FRS 'will attend 70% of all house fires within 8 minutes and 90% within 11 minutes' (2011, 8). Through response standards, the FRS exerts control over fire incidents which have yet to occur by showing how response can be automated (Adey and Anderson, 2012) and also by projecting resources onto fire events before their unfolding.

Introduced in 2004, the same year as the *Fire and Rescue Services Act*, FSEC serves to facilitate this renegotiation of response strategy under the problematisation of governing through risk. FSEC analysis arranges response standards in preparation for future fire incidents. Response standards are set through FSEC's analysis of the spatial arrangement of the FRS's fire stations and mobile resources and the relation of these resources to the prevalence of fire risk across space[97]. Fire distribution, consequence and risk is made interdependent with, and determined by, the location of FRS resources in FSEC analysis. The occurrence and consequence of fire is determined by fire's proximity to fire stations and how long the FRS takes to arrive at the scene of a fire incident. By assessing the relation between resources and risk, FSEC informs decision making on how to optimise response time and standards. The improvement of response times is achieved through hypothetically rearranging and relocating FRS resources to gauge whether response times to incidents could be shortened.

To analyse the relation between resources and the current distribution of fire risk, two stages in the analytic process of FSEC must be discussed. The first stage involves the configuration of a map of the

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[97] The space imagined in FSEC refers to the regional borders in which different FRSs across the country operate.

space which FSEC analyses. FSEC comes with an inbuilt Geographical Imaging System (GIS) known as Wings 32 which maps the space in which FRS response takes place. This map takes an extensive amount of time to configure[98]. The extensive configuration time is a result of the large sets of data which need to be uploaded. FSEC contains inbuilt versions of two key geographical data depositories. Data from these depositories will be uploaded into Wings 32 to characterise the map. The Integrated Transport Network (ITN) which supplies data on the road infrastructure of the region is uploaded into the map. Streets, motorways, roundabouts and junctions are uploaded to detail the road network of the map. These circuits are 'layered', moreover, with data on the speed limits on roads, along with the direction of travel and times of congestion.

ITN data are integrated with an Ordinance Survey depository contained within FSEC. The natural topography of the region is uploaded onto the map through Ordinance Survey data, indicating the rivers and varying levels of elevation in the map in a three-dimensional fashion. This topographic data, moreover, outlines the urban contortion of the space. Clusters of human populations which vary in their density are spread across the space along with the co-ordinates of buildings of significance such as schools and hospitals.

 These two data depositories provide the foundation of FSEC maps. Interfacing with FSEC in this moment of configuration, analysts' witness the gradual contortion of space as different geographical data are sequentially layered across and on top of each other. This process of data compilation will, in time, show the configuration of a basic map of the area. This map envisages the intersection of urban and natural terrains, the various means by which movement is facilitated across this space and how this circulation is regulated[99].

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[98] In interviews held with analysts using FSEC, it was explained that FSEC takes around twenty-four hours to configure its map. It is for this reason that FSEC is used less often than analysts would prefer.
[99] Ethnographic observation of CPP and textual analysis of FSEC 13/08/11.

Although this map configuration process relies on a multitude of data, the map FSEC has constructed is still basic and generic. In other words, the map refers only to the fixed surroundings and the mobile elements of space which FSEC will analyse. FSEC is customised and translated for the purposes of FRS risk analysis where export functions are used to source data from across the service's digital infrastructure. A seminal export link FSEC holds is with the Incident Recording System (IRS); the depository for data on all fire incidents attended by the service. Data will be exported concerning the location of fires by geographical co-ordinates, the severity of fires in terms of property damage, the time between response and arrival at the scenes of fire and what casualties were recorded at different fires.

To progress with the configuration of the map, all instances of fire recorded in IRS over the last three years are exported. Arriving in FSEC, this data are collated and then, by its geographical co-ordinates, distributed across the map. The location of individual fires can be seen by individual flame symbols. By clicking on a fire symbol, data on the specific fire incident are revealed such as damage to property, damage to life and FRS response time. Clusters of fire symbols begin to emerge as data are exported from IRS and integrated into FSEC maps, showing how fire occurrence overlaps in terms of general proximity. At this stage, FSEC gives an indication of the normative distribution and serialisation of fire as events accumulate within particular areas[100].

This preliminary distribution of previous fire incidents is far from sufficient in supplying data for FSEC analysis. Instead, data on resources must be accrued and input. Replicating the connection with the IRS, FSEC also contains an export function to a database called the Management Information System (MIS). Staffing numbers, patterns of shifts and the number and types of appliances[101] at stations are compiled. All such data are distributed on to the map in terms of their presence at particular fire service stations. These stations are represented by red spots (see figure five).

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[100] Ethnographic observation of CPP 13/08/11.
[101] Appliance is the technical term for fire engines.

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Thus far, data which facilitates the configuration of this map derives two sites; in-built FSEC links with key geographic data depositories and export functions to the service's digital infrastructure. The third and last source exceeds the service itself and enters into the domain of data collection on demographics. Data from Census reports are integrated with FSEC maps to populate areas but only by four different demographic variables. Instead of engendering an *en-masse* aggregation of the area by a host a variables, demographic data are used in a restricted way to highlight the distribution of certain groups. The categories which are exported from the Census and distributed in their proportionality of the general population across the map are: long term illness, single parent households, rented accommodation and pensioners living alone. As I explain in chapter seven, these particular demographic variables have been found to attain a consistent relationship to fire vulnerability.

This demographic data are understood as the last element needed for the FSEC map to visualise the population of a specific space. As Foucault was seen to remark earlier, population in the milieu does not just refer to human life. Instead, population also encompasses human life in its material surroundings and the events which occur within these surroundings. Demographic data on human life are situated within a map which also documents urban and natural surroundings. These surroundings themselves include the circulatory paths found within the region such as motorways and roads. Furthermore, the events which occur within the population are digitally expressed on this map. Specifically, fire has been visualised in its spatial distribution. Completing the data integration stage, FSEC maps population by three components: human life, the material surroundings of human life and the events which occur within these surroundings. These components of population are the same as those Foucault discusses in the relation to the milieu's modelling of population.

In completing this integration of different data, FSEC presents a highly detailed map of the space governed by the FRS. The configuration of this map is understood at this stage to be what analysts call

'flat'[102] or non-analytic. As such, the map presented only provides the foundation for analysis. Initially, FSEC analysis seeks to visualise a particular aspect of the normative order of the map: the normal distribution of fire incidents and the normal response times of the FRS to fire incidents. This is known by FRS analysts as FSEC's calculation of the 'Base-Case'[103] (see figure five). The Base-Case shows how fire is serialised across an area in relation to the service's own capacity to mobilise resources, respond and arrive at the scene of a fire from the current location of resources.

The normative distribution of both fire and response time is analysed through imagining circulation in FSEC. To undertake analysis what is referred to as a 'time travel matrix'[104] inbuilt in FSEC is run. This matrix simulates the FRS's response to all incidents over the last three years to calculate the time it takes the service to arrive at the scene of a fire. A number of variables of circulation are taken into account in running the time travel matrix. Firstly, the distance between the service's resources and the location of a fire is factored in to calculations. The matter of distance is combined with the roads the FRS would have to use to travel to an incident and the traffic and congestion found on these roads at the time of an incident. Response time is calculated, furthermore, in accordance with speed limitations caused by points of elevation such as hills and problems with navigating certain circulatory paths such as bridges.

Underpinning the establishment of the normative distribution of fire is thus both circulation and the inter-relationality of elements found within the population. Understood as a serialised occurrence of events, fire rates are determined through the capacity of FRS resources to circulate within a given space. This circulation, however, is complicated by the FRS's necessary immersion with other flows of the population such as general traffic and the material surroundings in which response will take place.

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[102] Interview conducted with CPP 14/10/11.
[103] Interview conducted with CPP 14/10/11.
[104] Interview conducted with CPP 14/10/11.

At the same time as running these calculations based on the relationship between resources, population and fire, the normative distribution of fire is expressed on the map. Different areas within the map are gradated by the differential frequency of fire occurrence. Replacing the fire symbols, areas within the map are gradually coloured differently to express where fire incidents occur the most. As shown in figure five, the intensity of fire occurrence is demonstrated through a colour coding descending from red being high occurrence to orange, yellow and turquoise. FSEC does not only offer a view of the present normative distribution of fire here. Due to data being uploaded from the last three years, this distribution of fire is understood by analysts as stable. As long as the location of resources remain the same, FSEC also forecasts fire distribution in the future. At this point FSEC operates to suggest the spatial distribution of fire risk.

It is important to note that the Base-Case that FSEC presents does not only show the spatial distribution of fire risk. Rather, the relationship between FRS resources, other circulations within the population and fire is formulated into a cost-benefit analysis of the current normative distribution of fire. This cost-benefit analysis shows two kinds of results. Firstly, FSEC calculates the cost of running stations in relation to the spatial distribution of fire. This means, for instance, determining the cost of using fire appliances to respond to the current number of incidents found within a specific area. The second cost-benefit analysis FSEC performs involves predicting the cost of fatalities from the FRS's response to fire incidents. This cost is established by calculating the average contribution an individual makes to the local economy along with the average money life insurance companies must pay out to the families of the deceased[105].

In detailing the initial configuration and analysis FSEC undertakes, this section has documented how the normative distribution of fire occurrence and fire risk is known through circulation and the inter-

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[105] For FSEC, the cost of a fatality stands, at the time of writing, at 1.4 million pounds. The cost-benefit analysis that FSEC performs was scrutinised through textual analysis.

relationality of elements within a population. It is in relation to the FRS's own capacity to mobilise

resources and respond that the normative spatial distribution, and consequence, of fire is visualised and

articulated by FSEC. Being understood as stable, this normative distribution of fire projects also the

distribution of fire risk as long as resources remain in their current location. As with the milieu, then,

FSEC certainly make FRS response preparation, in Foucault's terms, a 'problem of circulation' (2007, 20).

In the next section, I describe how FSEC uses circulation and inter-relationality, along with co-causal

understandings of fire, as the basis for enhancing response in preparation for fire risks.

6.4 The Hypothetical Rearrangement of Order in the Future

In the last section, I demonstrated how FSEC establishes and visualises the normative distribution,

consequence and risk of fire across the space which the FRS governs. FSEC runs what is called a time

travel matrix which calculates the time it takes the FRS to arrive at the scene of fire incidents in

accordance with the geographic location of FRS resources. On the basis of these calculations, FSEC maps

where fires occur the most along with the consequence of these fires and the risk of fire. Figure five

shows the unequal distribution of fire across the map in relation to the current location of FRS resources.

In the terms used by the FRS, FSEC has established the Base-Case fire risk distribution through time

travel matrix calculations. In response to the Base-Case, analysts in the service will manually modify the

geographic location of resources. This modification is achieved by changing the geographic coordinates

of FRS resources on the FSEC map. Changing geographic coordinates serves to hypothetically relocate

the FRS's resources across the map. Decisions about where resources should be relocated to are

informed by the distribution of fire risk according to the FSEC Base-Case which shows the current

normative distribution of fire. Resources will be repositioned on the map, then, to shorten response

times in areas where fire is most frequent and, consequently, the risk of fire is highest.

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Analysts then gauge the impact and effect this hypothetical reallocation of resources would have on the normative distribution of fire risk. This is achieved through repeating the time travel matrix calculations which establish FSEC's Base-Case. The run taking place here is, to some extent, mimetic of that run performed already. The calculations which will be made are based on the same variables as before such as fire incident location, the distance of fire incidents from FRS resources and the necessary immersion of FRS response capabilities within the general circulations and flows of the population. The difference of this time travel matrix calculation from that preceding is, of course, the changed geographic location of resources. Reiterating the inter-dependence between the resources of the FRS and fire risk, the run will reassess the prevalence of fire risk in its potential distribution and consequence in relation to the new, hypothetical geographic coordinates of resources.

From the projection of the normative distribution of fire risk established in the Base-Case, the hypothetical reallocation of resources and the re-run of the time travel matrix cause visible changes on the FSEC map. As seen in figure six, the FSEC map changes in its colour from that of the Base-Case. As I stated, resources will be initially relocated to areas where fire occurrence and fire risk is most prevalent. As such areas coloured red, the highest risk, in the Base-Case calculation will change colour. Red areas regularly turn yellow to accommodate for the hypothetical reallocation of resources.

As figure six shows, however, it is not only certain areas on the map which change colour by becoming better secured due to the shortening of response times to fires. Instead, colours will change in other areas in the FSEC map as well. Observing the map overall, the colour changes reflect the fact that, as fires in certain areas are responded to in a shorter time by the hypothetical reallocation of resources, response times to other areas will necessarily be lengthened. Along with improving response times and thus decreasing fire risk in some areas, the reverse is also witnessed on this map. Fire occurrence,

consequence and risk will thus heighten in some areas as an effect of hypothetical resource reallocation[106].

As noted with the milieu, then, basing analysis on the circulation and inter-relationality of elements in a population means that events and their future risk are conceptualised under new conditions. Events are conceptualised through co-causality. Rather than a cause leading to an effect here, co-causality means that cause and effect are bound to one another. This is the case in FSEC where the event of a fire is interdependently entwined with the location of resources and the capacity of resources to circulate. With the hypothetical reallocation of resources, response times have been shortened to areas of high fire intensity and risk which leads to a specific effect: a decrease in fire risk in this area. At the same time, however, this effect turns into a cause when considered from the viewpoint of other areas of the FSEC map. The risk of fires occurring in these areas is heightened because response times are lengthened as a direct result of response times being shortened elsewhere.

It is through FSEC operating on the basis of circulation and inter-relationality that fire can be understood as co-causal in both its occurrence in the present and in the future. The reciprocity of different areas and populations is expressed in FSEC by the mutual need of these areas for the resources which are at the FRS's disposal. These resources, however, are not infinite but limited. The same resources cannot be deployed to different places at the same time. It is how these resources circulate, and the time it takes the FRS to respond to fires, that determines the prevalence of fire risk in an area.

FSEC is organised by and offers a co-causal rendition and conceptualisation of fire risk. However, this thesis is not only concerned with how co-causal understandings of fire are made possible by knowing populations in terms of circulation and inter-relationality. Instead, the conceptualisation of fire risk by co-causality must be examined in terms of how it structures decision making upon, and governance of,

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[106] Ethnographic observation of CPP 13/08/11.

potential futures. The co-causal rendition of fire risk in FSEC must be investigated in terms of how it informs strategic decision making which allows the service to prepare for response to future fire events.

Where fire is understood through the circulation and inter-relationality of populations in space, Foucault notes that apparatuses of security intervene 'by getting components of reality to work in relation to each other, thanks to and through a series of analyses and specific arrangements' (2007, 47). It is this matter of arrangement that FSEC opens up for consideration through the hypothetical reallocation of resources. Analysts will not hypothetically change the geographic coordinates of FRS resources once. Instead, resources are reallocated over and again in order to repeat the time travel matrix calculations. With each repetition of the time travel matrix, fire frequency, consequence and risk are re-serialised and imagined in a new incarnation of its potential normative distribution through space. Each time resources are reallocated and the time travel matrix is run, colours within the map will change across different areas. These runs are undertaken and repeated until the location and geographical arrangement of resources which enables the optimum response times for the FRS is discovered. This optimum response time means achieving a balanced arrangement of resources, one which does not eliminate fire risk entirely[107] but ensures that response standards are met across the different areas within the map. As I described above and in chapter three, meeting response standards allows the service to account for, and justify, the interventions the service makes in the present by showing how resources can be allocated and attuned to projections of fire risk.

It is through envisioning circulation and the inter-relationality of populations that strategic decision making on response and the arrangement of resources can be undertaken in a way that is attendant to fire. Response is not thought of as an act of intervention which merely takes place as and when fires

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[107] Similar to Foucault's writings on town planning and the milieu, it is important to note that FSEC does not operate under the assumption that fire as an event can be completely eliminated. In relation to town planning Foucault states that: 'It is simply a matter of maximising the positive elements, for which one provides the best possible circulation, and of minimizing what is risky and inconvenient, like theft and disease, *while knowing that they will never be completely suppressed*' (2007, 19, my italics).

occur, however. As I noted when introducing FSEC, the meaning of response has been renegotiated under the contemporary problematisation of fire governance; which seeks to govern through risk. Response is conceived through, and in relation to, what can be said about fire as a risk which can be prepared for in the present.

Through the arrangement of resources and by gauging the resources' ability to arrive at the scene of a fire, the FRS seeks specifically to prepare response. To prepare response, the normative spatial distribution, occurrence and consequence of fire cannot be articulated merely by its present. Instead, it is through fire risk projections that FSEC enables decision making on how to arrange resources and thus prepare and optimise response times for future fires.

It is in rendering emergent fire as a risk that FSEC can be seen to operate with more extended notions of circulation and inter-relationality than appear in Foucault's commentary on the milieu. I suggested that circulation and inter-relationality not only facilitate analysis which reveals the current normative distribution of fire. Rather circulation and inter-relationality are also spatial co-ordinates which allow for hypothesis in FSEC. By hypothesising on their future arrangement, circulation and inter-relationality are crucial to enabling representations of fire risk in the region which surpass FSEC's Base-Case. Circulation and inter-relationality are thus enveloped within an experimental logic which works to predict the prevalence of fire risk in relation to the changeable locations of resources.

Due to their crucial centrality in hypothetical analysis, circulation and inter-relationality are treated as malleable phenomena in FSEC. Hypothesis shows how circulation and the relations between the population elements can be rearranged and manipulated to re-serialise the normative order the FRS seeks to secure. The elasticity and malleability of circulation and inter-relationality where hypothesis is undertaken in FSEC is, of course, not evident in Foucault's discussion of the milieu. Instead, FSEC takes upon another characteristic of the milieu I have yet to mention. In his notes on Deleuze and Guattari's *A*

Thousand Plateaus (2003, xvii), Brian Massumi states that the term milieu in this work equates to a medium. Furthermore, Foucault refers to the milieu as a 'medium for an action' (2007, 21). Rather than just a means to spatialise populations and enable a specific position from which to observe the interstice where elements of a population relate to one another, the milieu is also taken to offer a particular articulation of the circulations and events observed. FSEC can be seen to take on this characteristic of the milieu by articulating the future normative distribution of fire risk.

This future is articulated and revealed through hypothetically rearranging the relation which holds between resources and fire events. Elsewhere in Massumi's own work, circulation and inter-relationality might be attributed the character of 'array relations' (2002, 91) in their use to undertake the hypothetical analysis FSEC performs. Operating through logics of 'super-position and substitution' (ibid) whereby the locations of resources are geographically and hypothetically shifted, FSEC operates and engenders, for Massumi, 'orders of thought which are defined as the reality of an excess over the actual' (ibid). By making circulatory resources geographically inter-changeable and by gauging the effect this exchange has on the occurrence of fire, FSEC opens fire risk up for strategic decision making. By understanding circulation and inter-relationality as matters which can be hypothesised upon, FSEC can visualise fire risks which can be governed through the re-arrangement of resources and the establishment of response standards.

6.5 Conclusion

This chapter has examined the use of risk mapping in the contemporary FRS. Risk mapping takes place through the use of what is known as the Fire Service Emergence Cover Toolkit or FSEC. This technology is given importance within the digital infrastructure of the service because it facilitates strategic decision making around how fire events can be responded to. Rather than protocols which will be deployed at the actual scene of a fire, FSEC allows appraisal of the time it takes the FRS to mobilise resources from

fire stations and to travel to the scene of an incident. FSEC is used to establish, organise and fulfil the response standards I introduced in chapter three.

I discussed in chapter three how these response standards are emblematic of the renegotiation of response strategy under the contemporary problematisation of the FRS. To reiterate, the FRS no longer merely understands the interventions it makes as taking place as and when fires occur. Instead, fire risk projections shape, organise and justify the interventions the service makes in the present. Under this problematisation, response strategy has become an element of the service's preparatory approach to fire risk. In the contemporary, response involves using risk projections to organise mobile resources in anticipation of fire to meet response standards. FSEC serves to formulate and bring into effect response as a preparatory device.

Conceptually, I have argued that FSEC represents a way in which governing through risk is something that is conceived by, and enacted through, visualising space. This imagining of the 'space of security' (2007, 20) is evident in Foucault's discussion of the milieu in *Security, Territory, Population.* Noted initially in this chapter was how, as a spatial modelling device, the milieu thinks of populations. Population in the milieu does not just refer to human life, but human life in its material surroundings and the events which occur within. It is by these elements of population that the milieu offers a particular reading of the normative order of a given space. Normative order, furthermore, is examined in the milieu through the routine circulations of, and relationality between, elements co-existing within space. At the same time, events which disrupt this order can be identified both by their envelopment within, and production by, circulation and the relations between co-existent elements.

I have drawn on Foucault's commentary on the milieu to suggest that FSEC shapes FRS governance around managing circulations and the inter-relationality between different population elements. In this chapter, I have thus described how FSEC calculations operate on the basis of analysing relations

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between circulating elements. FSEC analysis is undertaken by gauging the mobility and movement of FRS resources. Representing the response capacities and capabilities of the service, the FRS's ability to arrive at the scene of an incident is necessarily complicated by its immersion within the circulatory flows of the general population.

It is by understanding the FRS through its mobility and the entanglement of this mobility within other circulations that the relation between FRS resources and fire incidence, consequence and risk is rendered emergent in FSEC calculations. The relation between the location of FRS resources and fire work initially to outline the normative spatial distribution of fire throughout the space governed. The event of fire and its potential future is rendered emergent as a problem to be governed by its interdependence with the location of resources. To be sure, fire risk can be intervened upon and governed through changes to the location of FRS resources and enhancing the ability of resources to respond to fire incidents in shorter time spans.

As an event, fire is conceptualised in FSEC in a way that is novel in relation to how fire has been conceptualised throughout history. As I demonstrated in chapter two, the institutional arrangement of fire brigades has at some periods been based on understanding fire by its spread. In FSEC, instead, fire and fire risk is conceived by its co-causality. I mean by co-causality that fire can be deemed a cause and effect depending on different viewpoints from which it is observed. This is due to fire's conceptualisation as a problem of space and the circulations and relations therein[108]. I showed in the last section of this chapter that fire risk's reduction in one area through the improvement of response times by resource reallocation is directly related to the intensification of fire risk in other areas.

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[108] It was stated in chapter two that circulation is pivotal also to understanding fire by its spread. In the Great Fire of London, for instance, circulatory paths such as roads allowed fire to travel to different areas of the city. In the case of FSEC, a co-causal conceptualisation of fire is achieved by a shift in what is considered to circulate. Along with fire incidents themselves, it is the circulation of resources themselves which is considered. Embedded in this co-causal understanding of fire then is also the inter-relationality which exists between circulating resources and the prevalence of fire in areas that are mutually dependent on these resources.

Expressed through how well resources can circulate, this co-causal rendition of fire is also produced by the inter-relationality of different areas within the FSEC map of the space governed. All areas have a mutual need for limited resources. As such, shortening response times to one area will lengthen response times in other areas. Following Foucault, FSEC consequently turns governance and response into a matter of arrangement. In the specific case of FSEC, this means governance is turned into a matter of discovering the arrangement of resources which will enable response times to meet the response standards of the FRS.

From Foucault's writing on the milieu, I have described how FSEC makes response strategy a problem of the circulation of, and the inter-relationality between, populations. Furthermore, co-causal understandings of fire emerge which make improvements to response possible through the rearrangement of resources. However, departures from Foucault's commentary on the milieu need to be made. I have stressed that governance in the FRS is problematised in the contemporary under anticipatory logics; where fire is not merely attended to but its projection as a risk organises the service's arrangement and justifies the strategic interventions the service makes in the present. Rather than response being about mobilisation as and when fires unfold in an ever-evolving present, response is also about preparing this mobilisation in anticipation of fires and exerting control over a fire even before it has actually occurred.

It is this concern with anticipating fires, and preparing response, that dictates the deployment of FSEC and its facilitation of strategic decision making around the geographical allocation of mobile resources. Circulation, inter-relationality and the co-causal articulation of fire events underpinning FSEC calculations are drawn upon to engender governance of fire risk rather than a response to fire's normative spatial distribution in the present. More extended notions of circulation, inter-relationality and co-causality than those found in Foucault's commentary on the milieu are applied in FSEC. This is

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evident where FSEC works to demonstrate how response times might be enhanced. As I have described,

response times are enhanced through analysts hypothetically reallocating resources by changing the

geographic coordinates of resources and consequently gauging what effect this new arrangement of

resources might have on the prevalence of fire risk. Elasticised and malleable conceptions of circulation

and inter-relationality are at work in hypothesis and are involved in experimental interchanges which,

for Massumi (2007), work to present potential futures. In the case of FSEC, these futures are visualised

in order to be controlled through new arrangements of FRS mobile resources and the establishment of

response standards.

Chapter 7. Lifestyle and Politics Causa-Mortis: Renditions of Human Life

and Subject-hood in Preventing Fires

7.1 Introduction

In this chapter, I turn attention to how fire risk is rendered emergent through the analysis of human

populations. Analysis of human populations shapes how the service seeks to prevent fires from

occurring. Preventative interventions are enacted through what are known as Home Fire Safety Checks

(HFSCs). Carried out by the Community Safety Team, HFSCs involve visiting domestic residences to install smoke alarms, to educate people about fire safety and to plan an escape route should a fire take place in the future.

Before HFSCs can be undertaken, however, decisions must be made about who should be targeted for prevention. To target preventative resources, the FRS constructs risk profiles of those most vulnerable to fire risk. These risk profiles are constructed by integrating information generated by two forms of analysis. Firstly, the FRS deploys software called MOSAIC. As a commercially available[109] risk analysis technology, MOSAIC predicts the existence and spatial distribution of different lifestyles found across Britain. MOSAIC information is integrated with information generated from investigations into incidents where fires have caused fatalities. These investigations offer a retrospective psycho-social account of individuals who have died as a result of a fire.

In the introduction to this thesis, I claimed that the FRS, and security apparatuses in general, govern populations. The definition of population I have taken is that expounded by Foucault. Population, according to Foucault, does not merely refer to a collection of human individuals. Instead, population encompasses human individuals in their material surroundings and the events which effect human life in these surroundings (2007, 11-30). The appearance of population in different risk analysis technologies work to outline 'referent objects' (Dillon, 2008, 265) which the FRS governs. Of course, fire risk is the principle object of governance rendered emergent through these analytic technologies. How fire risk is governed, however, is by managing and intervening upon other objects analysed by different technologies. Thus in chapter six, I showed how response times for future fires can be appraised and improved through cross managing and hypothetically rearranging geographically disparate resources. In chapter six, space and circulation become objects through which fire risk is governed.

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[109] By commercially available I mean that MOSAIC is designed by a private company and available for purchase by any company or organisation.

As opposed to these objects of governance, prevention seeks to govern and secure human life from fire risk. Through an examination of risk profiling, I explore in this chapter how human life is emergent and known through the risk analysis technologies deployed by the FRS. By knowing human life through the integration of fire investigation and MOSAIC analysis, I discuss how human life is constituted as a subject of prevention and anticipatory modes of governance in the FRS.

The constitution of human life as a subject of governance has been a matter of continual debate. In some cases, it has been argued that human life is known and governed by its most basic biological qualities. In *Security, Territory, Population*, Foucault describes security 'as a set of mechanisms through which the most basic biological features of the human species become the object of political strategy' (2007, 1). Foucault's claim that humans are governed at the level of their most basic biological functions has found currency in recent work. Through an exploration of the insertion of DNA and genetic science into political discourse and everyday life, for instance, Rose argues that contemporary governance can be described as the 'politics of life itself' (2009, 1). Alternately, Mbeme expands on what he calls 'necropolitical' (2003, 1) regimes of governance in which subjectivity is characterised by the continuing possibility of death.

Knowing the subject at the level of life itself retains its importance in enacting prevention in the FRS. This is the case because information on previous fatalities is a crucial component in building up risk profiles of those most vulnerable to fire. However, human life enters into the considerations of the FRS and becomes constituted as a subject of governance through other forms of knowledge alongside knowledge on life itself. I argue that knowledge on humans' most basic biological features is only one way amongst many for life to be made accessible to regimes of governance. Risk profiling in the FRS shows that knowing humans at their most basic biological facets is a component in a wider process of how life becomes 'informationalised' (Dillon and Lobo-Guerrero, 2008, 1).

Knowledge on life itself is necessarily adjoined to and assembled with other forms of knowledge which make human life governable. By an investigation of the deployment of MOSAIC in the FRS, I argue that knowledge on life itself is accompanied by knowing subjects at the level of style of life lead or lifestyle. Lifestyle and life itself are two different modes of knowing human life. However, these modes of knowing and constituting are interwoven with one another in the construction of risk profiles which mould and enact prevention in the FRS.

Knowing human life through the intersection of life itself and style of life is necessary because of the specific temporal conditions under which prevention is put into practice and the rationality which underpins governance in the contemporary FRS. In this thesis overall, I argue that the FRS intervenes in the present in a way that is shaped by, and justified through, projections of fire risk. This form of anticipatory governance cannot be shaped only through an account of the present precariousness of human life to fire or through renditions of humans as victims to fire in the past. Rather, human life must be gauged by its *vulnerability* to potential future occurrences of fire. To identify what the characteristics of the vulnerable subject are, and thus prevent fires endangering life, MOSAIC lifestyle analysis rises to prominence in risk profiling. As I will document later in the chapter, MOSAIC plays a crucial role in risk profiling because of its ability to predict and identify those most vulnerable to risk. Life itself is thus enveloped within a broader analytic category of lifestyle to identify the vulnerable subject and open vulnerable subjects up to forms of anticipatory governance.

The matter of how governance is made attendant to the future and rationalised through risk is inseparable from the question of how to intervene. I argue in this chapter that preventative interventions in (neo) liberal societies are shaped by negotiations between two political precedents. As Lentzos and Rose note, intervention should be the product of negotiation between 'the imperative of security and the imperative of freedom' (2009, 1). The FRS must secure human populations from the

possibility of fire but not in a way that threatens or disrupts the personal freedoms of contemporary

subjects. The freedom of the subject equates, in this chapter, to the privacy of individuals and the

freedom from being monitored through technologies like MOSAIC[110]. At the same time as privacy

cannot be breached, the FRS seeks to ensure that preventative intervention is accurate and targets

those most vulnerable.

To enact prevention in a way that is accurate but non-invasive of individuals' privacy, I argue that the

interweaving of life itself and lifestyle as forms of knowing human life does more than identify the

vulnerable subject. Instead, the combination of these two forms of knowledge on human life work to

undercut or circumvent privacy laws[111]. As a fatality has occurred, fire investigations can legitimately

generate information to a level of depth or granularity that is denied in MOSAIC lifestyle analysis. The

retrospective account fire investigations give of the lifestyles of those killed by fire are integrated into

the broad topologies that MOSAIC analysis establishes. These two forms of knowing human life are

brought together, then, to construct profiles of those most vulnerable to fire. In turn, prevention can be

targeted but in a way that does not compromise the freedom of individuals. Vulnerable life arises as a

key subject category because it enables governance by anticipation but in a way that does not disrupt

contemporary sensitivities around the notion of the free, private sovereign individual.

Below, I expand on the argument summarised in this introduction by the following structure. Firstly, I

discuss how Foucault approaches the matter of intervention with reference particularly to the notion of

frugal government and physiocracy (2008). Connected to the problem of intervention, I then critically

engage with arguments around how human life is constituted as a subject of governance in Foucault's

work. I then turn to explore how risk profiles of the vulnerable subject are constructed through lifestyle

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[110] As I will show, MOSAIC monitors populations at different levels of depth or granularity. MOSAIC can analyse populations according to specific individuals, households or post-codes. The FRS only uses MOSAIC at the post-code level to ensure that the privacy of populations is maintained.
[111] During my ethnographic observation, staff referred frequently to the *Data Protection Act* (1998) as the privacy laws that risk profiling might breach.

analysis undertaken by MOSAIC and fire fatality investigations. I argue that these two forms of knowing

human life come together to constitute the vulnerable subject and enact prevention.

7.2 Guiding life: Intervention and forms of subjectivity

In this section, I discuss two important themes in Foucault's 1978-79 lectures at the College De France.

This series of lectures are collectively known in English as *The Birth of Biopolitics* (2008). Firstly I discuss

Foucault's argument concerning how intervention in free, economically de-regulated, liberal societies is

justified and shaped with reference to his writing on physiocracy and the notion of 'frugal government'

(Foucault, 2008, 38)[112]. Tied to the problem of intervention, I then move to discuss how new modes of

governance produce, and are reliant upon, particular understandings of human life. What is at stake

here is how human life is constituted as a subject of governance through different forms of knowledge.

Foucault addresses the problem of intervention through a discussion of what he calls frugal government

in which those governing seek to operate by keeping intervention in society to a minimum. This form of

state operated in response to the development of liberal markets in Europe in the eighteenth and

nineteenth centuries. Frugal forms of intervention were possible, for Foucault, due to the dominance of

physiocratic arguments in explaining the operation of the market and social order more generally. The

underpinning implication of these arguments was that markets were regulated by their own internal,

natural qualities. Thus, on the fluctuation of market prices, Foucault remarks that;

> When you allow the market to function by itself according to its nature <...>
>
> it permits the formation of a certain price which will be called, metaphorically
>
> the true price and which will sometimes be called the just price (2008, 31)

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[112] Physiocracy appears in Foucault's work as an economic theory which propagates supposed natural laws which order and regulate the market; a market understood as comprised of agricultural relations of production (See Foucault, 2007).

The order of the market is consolidated by the market's internal nature. Similar to the process of normalisation I discussed in chapter six, order develops according to the market's internal mechanisms rather than by state regulation. Able to act according to its own self-limiting, self-regulating nature, central government intervention in the market is justifiably minimised.

The discursive transformations in rearticulating the market and thus renegotiating how intervention takes place extend to and correspond with new ways to understand human life for Foucault. The physiocratic reading of the creation of market order is aligned to and dependent on the construction, in Foucault's words, of 'someone who is eminently governable' (2008, 270). Similar to the conceptualisation of the market in terms of its internal, self-limiting natural impulses, it is by 'their most basic biological features' (2007, 1) that human life is known and articulated as a subject of governance. Human life is known at its most 'irreducible, non-transferable level' (2008, 268) of life and death here. Reiterating Foucault's argument in *Society Must Be Defended* (2003), government retains a particular type of power over human life; the right to make live and let die.

Foucault's focus on what Rose has called 'the politics of life itself' (2007, 1) has found application in more recent literature. For example, Achille Mbeme draws on Foucault to describe contemporary political rationales and practices of intervention which he calls 'necropolitical' (2003, 27). Necropolitics applies to situations in which the right to kill is the primary political objective. In necropolitical regimes, human life is constituted as a subject of governance, in Mbeme's terms, by the 'perception of the Other as an attempt on my life, as a mortal threat or absolute danger whose biophysical elimination would strengthen my own potential for life and security' (2003, 13). The imminence of death and the elimination of human life shows its 'capacity to define who matters and who does not, who is *disposable* and who is not' (2003, 27) in these necropolitical regimes. In other words, it is through acting upon the potential for the elimination of life that human life becomes the subject of governance.

Although human life becomes governed at its most basic biological level in the case Mbeme describes, subject-hood under contemporary forms of governance does not only take such bare terms. Another articulation of subjectivity is found in Foucault's biopolitical work called 'Homo Oeconomicus' (2008, 269). Homo Oeconomicus is emergent, in Foucault's terms, at 'the point at which the object of economic analysis should be identified with any purposeful conduct which involves, broadly speaking, a choice of means, ways and instruments , in short the identification of the object of economic analysis with any rational conduct' (ibid). Rather than a question of biological features and limits, human life enters into the consideration of those governing and becomes a subject by an understanding of its conduct and responsiveness to a set of historically variable economic conditions. With Homo-Oeconomicus, human life is understood beyond the scope of its most basic biological features and becomes instead a subject of governance in terms of economic rationality and conduct. For Foucault, conduct equates here to human beings' ability to assimilate to economic conditions which enable the maintenance of frugal state intervention.

In this section, I have dealt with two important issues which arise in Foucault's lectures *The Birth of Biopolitics* to provide discussion in the next sections on risk profiling and prevention in the FRS. I have demonstrated how the matter of intervention is problematised according to the dominance of different discursive regimes. With physiocratic discourse, Foucault argues that emphasising the internal, natural regulatory mechanisms of markets in the eighteenth century ushered in a form of frugal government which operates on the basis of minimal intervention.

In alignment with the discursive problematisation of intervention, I have discussed how human life becomes a subject of different modes of governance. I have argued that modes of governance and intervention are established in correspondence with, in Aradau and Van Munster's terms, 'a particular form of life and subjectivity' (2008, 201). Two ways in which human life is constituted as a subject of

governance have been explored in this section. With reference to Foucault and Mbeme, I have

described how the most basic biological features of human life can become crucial to articulating the

subject of particular modes of governance. I have also drawn, however, on Foucault's notion of Homo-

Oeconomicus to show another way in which human life becomes a subject of governance. Operating as

an understanding of human life beyond biological facets, Homo-Oeconomicus is a conceptualisation of

the subject of governance by the responsiveness of humans to economic conditions.

I now turn to discuss how human life is made into a subject of governance in the FRS's prevention

strategy. Rather than being treated as mutually exclusive, I argue that knowing human life by its most

basic biological features and knowing human life by forms of knowledge beyond biology can coalesce in

constituting governed subjectivity. I explore, then, how the subject of governance in the FRS emerges

from intersecting and assembling different forms of knowledge on life. The integration of different

forms of knowledge on life is used in the FRS to establish risk profiles on those most vulnerable to fire.

These profiles facilitate decision making on where and to whom the above mentioned HFSCs can be

justifiably deployed in seeking to prevent future fires from occurring.

7.3 MOSAIC and Lifestyle as the Subject of Anticipatory Governance

The most important software for risk profiling in the FRS is called MOSAIC. According to promotional

literature (2009), MOSAIC has been used by public services over the past twenty years for a number of

purposes[113]. Designed and sold by the credit checking company Experian, MOSAIC software generates

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[113] Promotional literature produced by Experian shows that MOSAIC is used by some Ambulance and Police services (See Experian (2009) *Improved Outcomes through Applied customer Insight; Experian's MOSAIC Public Sector Citizen Classification for the United Kingdom*).

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accounts of the different consumer behaviour found in Britain's population. In MOSAIC, consumer

behaviour analysis is expressed through what Burrows and Gane refer to as a 'geo-demographic' (2006,

793) coordinates. Traditional demographic data on populations such as age, gender, ethnicity and

occupation is interwoven with information on the geographical distribution of demographic categories.

The MOSAIC database is compiled first by large scale data that indicate 'the latest societal trends in the

UK' (2009, 4). These trends are captured by drawing on secondary research such as the British Crime

Survey, Hospital Episode statistics, Higher Education statistics and statistics from England and Wales'

Indices of Multiple Deprivation (ibid). The exportation of these large scale surveys is part of a wider

sourcing process, in which '440 data elements' (2009, 5) are drawn upon. In its programme for the

public services, the secondary surveys referred to above account for thirty eight percent of all data

acquired by MOSAIC.

The residual sixty-eight percent is drawn from Experian's own data repository which is known as the

Consumer Dynamics Database. Data are collected here from 'the electoral roll, council tax property

valuations, house sale prices, self-reported lifestyle surveys and other compiled consumer data' (2009,

5). Overall, the sources of data that MOSAIC make use of can be located in six different categories

according to promotional literature. As the pie chart figure shows (see figure six), these categories are:

demographics, property value, socio-economics and consumption, property characteristics, location and

financial measures. Within each of these individual categories, moreover, between two to eight sub-

categories can be found.

On top of these sources, the MOSAIC database is verified by other data sources. Multiple large scale

surveys are used to sustain the MOSAIC database including the University of Essex's British Household

Survey along with a host of other consumer surveys. These surveys include research conducted on the

media consumption of 350,000 people by the Research Now market research company. The financial

behaviour of the population is sustained by YouGov's[114] survey of 66,000 people along with TNS

BRMB's[115] Target Group Index Survey of 25,000 adults on the consumption of products, brands and

media. Furthermore, various smart technology research mechanisms have recently been installed to

inform MOSAIC. Most important is Experian's Hitwise online computer intelligence which records the

movement of eight million people across different websites.

Through data on the prevalence of consumer behaviour MOSAIC purports to offer predictive accounts of

the different lifestyles which can be found in Britain[116]. Lifestyle emerges as an analytic category to

know human life by integrating different data referred to above. A person's lifestyle is defined initially

by what they spend money on, how they spend money and where they spend money. This is combined

with conventional demographic data on, for instance, how well educated people are; age, occupation,

their ethnic background and their connections to various public services. Lastly, MOSAIC spatially

distributes different lifestyles across Britain. Data on consumption habits and demographics are

enveloped within data on where specific lifestyles are found in the country.

MOSAIC makes lifestyle the principle by which to sort, divide and categorise populations. Different

lifestyle classifications are created by MOSAIC within which human populations are placed. The

classifications used to articulate the lifestyles of populations come at three different levels of depth or

what I called granularity in chapter four. The most in-depth classification assigns particular lifestyle

attributes to actual individuals. Resonating with Hacking's (2006) commentary on how statistical

analyses make and remake people, individuals are identified and sorted into one of one hundred and

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[114] YouGov is a United Kingdom based opinion poll organisation. (See http://yougov.co.uk/about/ for more).
[115] TNS BRMB is a United Kingdom based social research company (See http://www.tns-bmrb.co.uk/about-us/history for more).
[116] Through MOSAIC, lifestyle emerges as a way to know human life and constitute life as a subject of governance. With lifestyle, the notion of collective life is not reduced to understanding humans by their shared nature as a species. Rather than biological fact, human are known by a combination of multiple categories such as demographics, location and consumer behaviour. With MOSAIC, I will argue that ways of knowing human life beyond what has been referred to as life itself come to render human life as a subject of political strategy.

forty-six different person types. At an intermediate level, populations are sorted into sixty-seven

different types of households. On the broadest level, the population is classified at the level of those

lifestyle types sharing the same post-code.

It is at the post-code level that MOSAIC promotional literature for the public services focuses. Fifteen

different classifications exist at the post-code level. These classifications run from group A: Residents of

isolated rural communities and rural families often with city jobs to group F: Couples with young

children in comfortable modern housing all the way to Group O: Families in low-rise social housing with

high rates of social benefit need (2009, 10). Each of these classifications are divided within themselves

and split into sub-categories[117]. These sub-categories supply a brief account of the different types of

individuals and households which are broadly found within the post-code type.

7.4 The Politics of the Postcode: Using lifestyle to Prevent Fires

Similar to the creation, in Foucault's terms, of 'someone that is eminently governable' (2008, 270),

human life is known under new discursive parameters through MOSAIC. As I have demonstrated above,

human life is articulated through the intersections between different forms of knowledge. These forms

of knowledge combine to create the category of lifestyle. What I will now turn to show is how the

category of lifestyle makes human life accessible to, and the subject of, new forms of anticipatory

governance and intervention in the FRS.

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[117] Within the overall classifications, three to nine different sub-categories are found. For example in Group O: Families in low-rise social housing with high rates of social benefit need, three sub-categories are found. These are O67: Older tenants in low rise social housing estates where jobs are scarce, O68: Families with various structures living in low rise social housing estates and O69: Vulnerable young parents needing substantial state support (2009, 11).

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To return to the promotional literature scrutinised above, information generated by MOSAIC allows organisations to 'understand potential risk and identify investment opportunities' (2009, 1). It is because of this explicit concern with risk and the future that MOSAIC is used by the FRS. Rather than concerning merely the present state of human life, the FRS uses MOSAIC to gauge what this present indicates about the future of human life in relation fire risk. Using lifestyle attributes, the function of MOSAIC in the FRS is to create risk profiles of those most vulnerable to fire. Through the establishment of risk profiles, the service can target particular subjects in the present to prevent fires in the future. MOSAIC facilitates decision making on prevention due to its capacity being, as one analyst noted, 'all about building... a fuller picture on where we are going to target, who we are going to target and how we are going to target'[118].

To construct risk profiles and enable decision making on the allocation of preventative resources, MOSAIC is not used simply in the form by which it is acquired by the FRS. Instead, MOSAIC must be customised to serve its specific aim of targeting preventative resources. This customising process requires that databases which are bespoke to the service and empty data holding facilities are integrated with information that MOSAIC holds.

Initially, customising MOSAIC for the purposes of preventative targeting involves the transportation of MOSAIC's fifteen post-code lifestyle groupings for the particular region in which the FRS operates onto an Excel spreadsheet[119]. From top to bottom, this spreadsheet does not account for lifestyle groups alphabetically. Instead, the fifteen groups descend according to the declining proportion of the region that populates each group. At the top of the spreadsheet is lifestyle group K. Although divided into sub-categories, this group is described by Experian overall as 'Residents with sufficient incomes in right to buy council houses' (2009, 14) who tend to live in areas where there is 'very little anti-social behaviour'

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[118] Interview conducted with CPP 14/10/11.
[119] Ethnographic observation of CPP 23/09/11.

(ibid). As opposed to 'well educated' this group is made of 'people who are practical and enterprising' (ibid), who value 'self reliance and responsibility' (ibid). This group is often frequently invested in 'informal community networks, often centred around family and former school friends '(ibid)which are re-enforced over time by entertainment such as 'Television and the Home computer' (ibid). To divide this group into its sub-categories, group K50 (Older families in low value housing in traditional industrial areas) occupies 10.40 percent of the whole county population. Additionally, the groups K 48, 49 and 51 occupy 11.47 percent of the population together[120]. Although this group occupies the highest proportion in the county, it is important to note that each MOSAIC group in the table is accompanied by the percent of the population that occupy it.

For the FRS, MOSAIC categorises the population at the post-code level of granularity. The choice of the broadest tabulation of lifestyle is important for the next step in customising MOSAIC towards prevention strategy. From the Excel spreadsheet, the lifestyle groups into which populations are sorted are spatially distributed across the region by a GIS map simulation inbuilt in the MOSAIC package. The post-code is known as the 'location field' by which to plot different lifestyles of populations across the map. Attached to different post-codes, the extent to which lifestyles occupy specific areas in the region is visualised. The post-code operates as a 'centroid' here. The centroid is the exact location of the post-code on the map. Parameters extend out of and around this centroid with a length and circumference that is determined by the amount of space each lifestyle group is understood to inhabit[121]. As figure seven shows, the location, distribution and extent of space different lifestyles occupy is visualised on the map through colour coding.

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[120] The full definition Experian gives of these groups are as follows. K48: Middle aged families in right- to-buy homes, K49: Low income older couples long established in former council estates and K51: Often indebted families in low rise estates (2009, 14).
[121] Ethnographic observation of CPP and textual analysis of MOSAIC 23/09/11.

Thus far MOSAIC customisation has been limited to tabulating populations according to lifestyle groups and visualising the spatial distribution of different lifestyles. To visualise the distribution of vulnerable subjects, analysts upload data from the service's Incident Recording System (IRS) on to the lifestyle map MOSAIC provides. As I have already discussed, IRS records and stores data relating to each individual instance of fire attended to by the FRS. IRS is used here to plot the exact geographical locations of fire incidents on the GIS map of lifestyle distribution. Within the distribution of lifestyles, the location of individual fire incidents is found on the map.

This spatial correlation between lifestyle and the location of fire incidents is also expressed through updating the Excel table of MOSAIC groups. Fire occurrence appears in this table in a broken down fashion; with a percentage figure representing how many incidents were recorded in each post-code. Sitting side by side in this table is the percentage proportion of the region's population which belong to each of the fifteen lifestyle groups and the proportion of fires which occur in the post-codes in which these lifestyle groups reside.

On the basis of the comparative gaze established between lifestyle groups and fire distribution in the Excel table, what is known as 'over-representation'[122] analysis is undertaken by analysts. Over-representation analysis works to outline what groups are most vulnerable to fire risk. To paraphrase the analyst narrating this process as it was ongoing[123], it was stated that if lifestyle did not have an impact on vulnerability, the number of dwelling fire incidents in post-codes should match exactly the proportion of the population which fits into each lifestyle group. When viewing the spreadsheet which juxtaposes fire rate of a post-code with the prevalence of specific lifestyles, however, variances appear. As noted, the proportion of people who have been posited in the K48 lifestyle group is 10.40 percent. This proportion is exceeded by fire incidents occurring in K48 post-codes by 3.16 percent (see figure eight). In

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[122] Interview conducted with CPP 14/10/11.
[123] Ethnographic observation of CPP 23/09/11.

instances where the fire rate exceeds the proportion of lifestyle within a post-code, specific MOSAIC groups will be targeted for prevention.

The deployment of MOSAIC analysis in the FRS shows that for particular forms of governance to be enacted, the subject of governance needs to be rendered emergent, understood and known through specific analytic parameters. To facilitate preventative interventions in the FRS, the subject is known and accessed in a way beyond knowledge of their biological base. Instead, human life must instead be known by the style by which lives are lived. As I have demonstrated, lifestyle analysis works through categorisation and the division of collective human life to render emergent the subject of prevention.

I have argued that lifestyle analysis means MOSAIC can generate accounts of the future of human life. In terms of the risk profiling undertaken by the FRS, MOSAIC works to render emergent those lifestyles that are most vulnerable to fire risk. In their analysis of mapping techniques used to make spatial assessments of potential nuclear attacks on the US in the Cold War, Collier and Lakoff (2008b) show how the nomenclature of vulnerability rises to prominence in putting into place geographically and institutionally disparate emergency preparedness measures. In this chapter, I argue that vulnerability operates to make human life governable by interventions which take place in anticipation of events and on the basis of risk calculations. The information generated in customising MOSAIC in the FRS only concerns the present state of human life in as much to make statements on the potential future of human life. The emergence of the vulnerable subject enables interventions that attend to the future through action in the present.

The central role lifestyle plays in calculations of vulnerability can be illustrated by a problem that analysts face in deploying MOSAIC towards the ends of prevention. To further clarify risk mapping by lifestyle, what are known as fire hotspots are established on the above mentioned maps which correlate lifestyle distribution to fire incident location. These hot-spots give a more detailed projection of fire's

distribution by showing the density of fire occurrence in specific post-codes. Density of fire occurrence is visualised through the existence of clusters of red spots across the map in specific areas. In establishing hot-spots, a contradiction becomes evident however. The hot-spots tend to exceed the spatial extent of lifestyles within a post-code which suggests that previous fire locations do not fit precisely with the areas of purported lifestyles. With this discrepancy between the distribution of lifestyle and fire incident location, a choice confronts the analyst. The choice is between the aggregations MOSAIC constructs to identify the potential vulnerability of human life or the actual location of fires in history. Depending on what information is chosen, the preventative resources of the FRS will be targeted in different geographical locations.

Lifestyle aggregations are selected over fire incident location history. This choice is justified strategically by how MOSAIC knowledge on populations is better aligned to anticipating risk rather than understanding the past. In the words of analysts, choosing analysis that anticipates over analysis on the past shows the 'pro-active rather than reactive'[124] ethos of the service. Although the information generated by MOSAIC is predictive, it is favoured precisely because it renders the subject emergent by its vulnerability. As such, MOSAIC analysis is chosen because it offers a rendition of the vulnerability of humans to fire in the future and thus facilitates preventative interventions in the present.

The level of granularity or depth by which MOSAIC knows human populations and categorises lifestyle is also important for discussion of how prevention is enacted. As noted, the specific MOSAIC package that the FRS uses sorts lifestyle groups at the post-code level. Knowing subjects at the level of the post-code allows the FRS to 'govern at a distance' (Rose, 2006, 157). The space which is cultivated between the FRS and subjects governed by using MOSAIC at the post-code level is produced by, and entangled in, a wider problem of security summarised by Lentzos and Rose earlier as the negotiation between 'the imperative

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[124] Interview conducted with CPP 14/10/11.

of freedom and the imperative of security' (2009, 230). Risk profiling analysis is conditioned by juridical precedents around the privacy of individuals in liberal social democracies. 'The law is that' as one analyst remarked, 'you or I, as well meaning as you might want to be to ensure people's lives from accident or their own lifestyle impinging on their means of death, the law is that you cannot stick your nose in'[125]. In a similar way to Foucault's conditioning of frugal government, knowing the lifestyles of those governed at the broad level of post-code allows vulnerable people to be identified without being to invasive of their privacy.

As a particular 'mode of attentiveness' (Amoore, 2009a, 19), the post-code is thus imbued with importance because it allows the successful negotiation between a need to secure the future without threatening the freedom of governed subjects. The post-code emerges as a means to know the lifestyle of subjects and determine when such a lifestyle can be understood as vulnerable by over-representation analysis I described above. At the same time, such analysis does not invade the privacy of people and their right to live their lives.

Although analysing and visualising lifestyle distribution at the level of post-code renders preventative intervention justifiable in negotiation with legal matters around privacy, disputes do exist between staff concerning how accurate MOSAIC risk profiles are in targeting the vulnerable subject. As one analyst argued, MOSAIC profiling can be detrimental to preventative targeting because the post-code is 'too wider scope and not targeted enough'[126] to identify vulnerable subjects. Operating on the level of post-code classifications, it is held by some analysts that some vulnerable individuals might be misplaced within lifestyle groups. Turning Ian Hacking's (2006) arguments about the making of people through statistics on its head, MOSAIC is seen here to have the capacity of making people invisible. An example of this possibility was offered hypothetically by one analyst when I was asked to imagine 'a little old

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[125] Interview conducted with Fire Investigator 17/10/11.
[126] Interview conducted with CPP 14/10/11.

lady... living on a street on her own. It's a fairly affluent street, the houses are relatively new, that person would be tagged with the profile of that entire street. But the little old lady sleeps in the dining room because she cannot get up stairs...'[127] Through this analogy, the analyst argued that only an illusion of safety might prevail by the use of MOSAIC at the post-code level. Lifestyle categorisations here, rather than appropriating the lifestyle of individuals at a distance, can actually lead to the erasure of particularly vulnerable subjects.

As the analyst went on to elaborate, MOSAIC is 'okay for looking at groups, you know, wider groups and streets'[128] but MOSAIC's ability to lead to targeted preventative intervention is threatened by its potential to overlook individual lives. At the same time, however, suggestions of updating MOSAIC granularity to an individual level are rejected on the basis that the drive to monitor lifestyle and identify fire only in its possibility cannot justify breaching privacy laws. It is at this point that the FRS finds itself in a conundrum. On one hand, the service needs to improve targeting by knowing the lifestyles of subjects in more detail. On the other, the service cannot be seen to invade people's privacy due to laws such as the *Data Protection Act* (1998). In response to this problem, another source of information is drawn upon to facilitate the generation of risk profiles. Indicating how conceptions of the subject at the level of life itself retain importance in anticipatory forms of governance, MOSAIC is supplemented and sustained by information from fire investigations. As I document in the next section, these investigations are retrospective accounts of fires in which fatalities have resulted. I will argue that the synthesis of MOSAIC with fire investigations shows how enacting prevention comes to rely on understanding the subject by both the style of life lead and life itself.

7.5 The Question of Death in the Politics of Anticipation

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[127] Interview conducted with CPP 14/10/11.
[128] Interview conducted with CPP 14/10/11.

Fire investigation information is not integrated with MOSAIC analysis in any formal way involving the

establishment of export functions between different databases. Rather, information from fire

investigation is provided to the Community Safety Team at the same time as MOSAIC information to

enhance the detail of risk profiles of those most vulnerable and inform decisions on how to target

preventative resources. Fire investigation information can be compared and integrated with MOSAIC

information because fire investigation information is formalised into fire incident charts[129]. These charts

offer a demographic and lifestyle account of each individual fire fatality which has occurred in the region

over the last five years. Included in these charts is information about a person's age, occupation,

residential address and connections to public services[130]. Also included is information on whether the

person smoked, drank and what kind of household they resided in. This categorisation of fire fatalities

into geo-demographic and lifestyle information contributes to the information produced through

MOSAIC analysis. The resulting profile of the vulnerable subject is highly detailed due to information

from investigations into individual fatalities. At the same time, profiles are able to address the future

because of the broad predictive account of vulnerability that MOSAIC generates.

Two types of investigation are undertaken by Fire Investigators. Firstly, investigations have a role that

may be better defined as inspection of commercial premises. These investigations involve visiting sites

across the region to check the compliance of businesses to fire safety regulations. In the words of the

Fire Investigator interviewed, these inspections are directed at assessing the potential of buildings for

'structural failure or material systems failure'[131] which might occur during, or lead to the advent of, fire.

The second type of investigation takes account of what happened at a fire incident in a domestic

property and the causes behind the fire. Rather than infrastructural failure, what investigators

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[129] Due to the identification of specific people and their personal details, these charts cannot be used as a figure in this thesis.
[130] Ethnographic observation of the Community Safety Team 10/09/11.
[131] Interview conducted with Fire Investigator 17/10/11.

concentrate on here are the individual human lives entangled in both the instigation and consequences of fire. Through a retrospective account of the set of events which lead to a fire, these investigations generate information on both why a specific individual became a victim to fire and the particular lifestyle attributes of this individual.

In this chapter, I focus solely on the second type of investigation outlined above. In considering the contributory role fire investigation has in constructing risk profiles, this section has two main aims. Fire investigation will be described as a process. I will outline the methods by which Fire Investigators identify the specific lifestyles of individuals who have died from fire. Subsequently, I will discuss in further depth how fire investigation information is brought together with MOSAIC analysis to enable the Community Safety Team to target HFSCs to those most vulnerable to fire risk.

The fire investigations discussed in this chapter are undertaken at three different levels. Level one investigation attends to what are known as secondary fires where damage is minimal and confined to outside spaces. Above this type of investigation are levels two and three. These investigations attend to more complex cases where damage is substantial in terms of both property and people. Usually the fires investigated at level two and three have occurred inside a property. What distinguishes levels of fire investigation then is the relative severity of fires in terms of how a property and the public at large were endangered[132].

The type of investigations which inform the construction of vulnerability risk profiling to enact prevention are levels two and three. This is because these levels of investigation examine fires which have resulted in fatalities and have thus aroused the suspicion of investigators. MOSAIC is supplemented here by a type of analyses that is permitted an unlimited scope and depth in understanding fire incidents. There is a concerted push in investigations to understand the set of events which lead to a

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[132] Interview with the Fire Investigator 17/09/11.

fatality in terms of how a fire started and why it spread. Due to the severity of the incident for human

life, the Fire Investigator stated that investigations can legitimately breach any limitations set by privacy

laws[133][134]. Fire investigations are thus not subject to the same legal limitations as MOSAIC nor are they

entangled in complications around the opposition between security and freedom. As such, fire

investigations come to contribute to MOSAIC risk profiles by treating human life at a level of granularity

usually denied to the FRS.

Multiple lines of inquiry are pursued by investigators to grasp the causes behind fire incidents. These

lines of inquiry act to build a psycho-social profile of the individual who has died. To do so, investigators

initially contextualise the deceased by the social network in which they were situated. This construction

of a 'social network' involves a visual element in which the deceased is situated in the middle of a

spider-diagram. Surrounding the deceased are multiple lines of relations to others. With the name of the

deceased in the middle, lines lead out to relations such as family, friends, and connections to public

services[135]. By establishing this social network, investigators identify a host of contacts to be interviewed

in order to accrue and construct a lifestyle profile of the deceased.

Subsequent to establishing this spider-diagram, investigators will first interview family members and

friends. Secondly, by interviewing their doctor along with the coroner, the deceased's connection to

public services will be inquired into. Family doctors will be asked about any afflictions the deceased had,

if any medication was prescribed and of any substance abuse issues the deceased had such as drug

addiction, smoking and alcoholism. Further details on such matters are provided by family members

concerning living conditions, non-visible connections to other people or the deceased's mental health.

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[133] Fire investigations are still subject to confidentiality laws. As such, the names of specific fire fatalities cannot be provided in this thesis. In addition, the visual methods by which the deceased are analysed can be described but not used as a figure in this thesis.
[134] Ethnographic observation of the Community Safety Team 01/10/11.
[135] Ethnographic observation of the Community Safety Team 12/09/11.

These relations do not work to directly provide seamless data by which a linear profile of the deceased can be built. Instead, what Aradau and Van Munster refer to as a 'conjectural reasoning' (2011, 31) takes place in which the investigator treats information received as so many clues by which to make comparative judgements and deductions to lead to a more accurate profile of the deceased. The investigator I interviewed spoke of how interpretations could be made about how 'functional or dysfunctional'[136] the deceased's relations were by contradictions in information supplied. As such, the investigator described how a lack of knowledge held by family and friends about the deceased's lifestyle relative to doctor's records indicated 'dysfunctional'[137] familial relations. The two narratives of the deceased; one from engagement with public services, the other from private ties, do not necessarily work to construct a profile piece by piece. Instead, the stories of each contact can be used to identify gaps which might reveal how well integrated the deceased was in the social network constructed.

In conjunction with interviewing personal ties, the Fire Investigator undertakes an inspection of the premises in which the fire occurred. This inspection involves searching the property to discover both the exact material objects which could have contributed to the fire and how such objects work in relation to other clues accrued about the deceased's lifestyle. According to the Fire Investigator, the first place inspected will be the bins of the property. From this search, the Investigator can identify any substances which might have increased the vulnerability of the deceased to fire.

Inspections of premises and interviews with relations are interwoven to construct a lifestyle profile of the deceased. In one instance described by the Fire Investigator, two large bottles of whisky were discovered at the scene. This evidence contrasted with accounts given by the family of the deceased. Although certainly an alcoholic, the deceased was assumed to be reliant on excessive amounts of lager. From the doctor's narration of the deceased's physiology before death, the Fire Investigator had

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[136] Interview conducted with Fire Investigator 17/10/11.
[137] Interview conducted with Fire Investigator 17/10/11.

recorded that muscular depletion had developed from the deceased's alcoholism. In connecting bottles

of whisky, the family's contradictory story and the doctor's diagnoses, the investigator could speculate

on why the deceased turned to whisky, thus increasing their vulnerability to fire. Due to muscular

deficiency, the deceased would not be able to carry a large crate of lager so moved to whisky with its

lighter weight but higher alcohol level and flammability.

The results of fire investigations will supplement and sustain claims made by MOSAIC by offering a more

detailed level of granularity in knowing the vulnerable subject. Investigation does not outline broad

notions of the spatial distribution of vulnerability but the everyday lives of individuals supposedly found

within MOSAIC's larger classifications. Along with working to supply new levels of depth to MOSAIC's

broad spatial categories, the information generated from fire investigations can run against the

assumptions MOSAIC makes. When asked about MOSAIC, the Fire Investigator responded that: 'The Fire

Service focus too much on this predictive model of trying to get people in their pigeon holes'[138]. In

opposition to prediction and generalisation, fire investigation can work to re-inform the profiling of

vulnerable populations by individual cases.

Such a debunking of broad MOSAIC categories is prevalent in relation to alcoholism. Alcoholism is a

lifestyle trait with particularly efficacious connections to fire fatality and vulnerability. The assumed

classification of the alcoholic, at least for the Fire Investigator interviewed, would be males in their mid-

fifties with no long term address. However, data from investigations points to on another type of

alcoholic, one that is known as 'functional'[139]. Instead of male, this functional alcoholic, according to the

Fire Investigator, is disproportionately female, in her forties and perhaps recently unemployed.

Specific variables present in the investigation will intimate to the Fire Investigator that the life lead of

the deceased may be one of a functioning alcoholic. Where a fire has killed what has come to be known

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[138] Interview conducted with Fire Investigator 17/10/11.
[139] Interview conducted with Fire Investigator 17/11/10.

as a functioning alcoholic, homes inspected are described by their general cleanliness. This cleanliness is taken as indicative of the overall well-organised character of functioning alcoholics. The level of detail in constructing the profile of the functioning alcoholic can extend to describing their daily routine which has one novel event: the advent of fire. According to the Fire Investigator interviewed, this person will usually start their day administering routine affairs such washing, paying bills and going to the supermarket. At the super-market, alcohol is bought around mid-day. After returning to the house and drinking for a couple of hours, the person might 'pass out'[140]. This routine has lead to a fire in the past where falling unconscious has coincided with another activity such as cooking or smoking.

The depth and complexity of the Fire Investigator's narrative on the functioning alcoholic would be impossible to gather by MOSAIC at any of its post-code, household or individual levels because of MOSAIC's inability to track, trace and predict human routine without the use of digital data. According to the Fire Investigator, the functioning alcoholic could avoid being known by evading the means by which MOSAIC accrues data. MOSAIC depends in part on data available through credit card transactions which document consumer behaviour. Due to their perceived insistence on paying for 'everything in cash...on the day it was required'[141], such data on the functioning alcoholic is usually unavailable. This insistence on prompt, organised and reliable routines is seen by the Fire Investigator as part of the functioning alcoholic 'not wanting to give an outward visual representation of themselves (as alcoholics)'[142]. For MOSAIC, ironically, the avoidance here of credit card tracing technologies shows how functioning alcoholics could not be identified due to the very particularity of their personality that MOSAIC aims at capturing.

The investigations by which in-depth lifestyle profiles of fire fatalities are developed, reliant on minutiae scraps of evidence and discrepancies between retrospective narratives, would appear to be polar to the

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[140] Interview conducted with Fire Investigator 17/11/10.
[141] Interview conducted with Fire Investigator 17/11/10.
[142] Interview conducted with Fire Investigator 17/11/10.

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type of broad sorting of populations that MOSAIC undertakes. Investigation comes to inform MOSAIC, however, where investigation information is translated into classifications and categories. Beginning in qualitative form, fire fatality investigation information is accumulated and compiled into charts which document the prevalence of certain lifestyle attributes which contribute to fire fatality. Fire investigation information appears now in a similar way to MOSAIC tables. Instead of divisions being made by post-codes, divisions are made by sorting fire fatalities into particular lifestyle activities such as smokers/non-smokers and alcoholism along with demographics such as age, ethnicity and occupation.

Fire investigation information can be grouped and sorted in a similar way to MOSAIC classification then. Through this translation or re-expression of fire fatality information, the categories MOSAIC puts into practice are integrated with specific lifestyle attributes of previous fire fatalities. Subjects of governance are known at two levels of granularity by this integration. MOSAIC can outline where specific lifestyles can be found across the space governed whilst fire investigation can detail what particular activities are undertaken within these lifestyle groups. Along with being able to identify the most vulnerable post-codes, specific lifestyle traits which amplify vulnerability to fire can be identified.

This integration between MOSAIC analysis and fire fatality investigations is found where decisions are made about where, and to whom, preventative intervention should be targeted. As I have noted, the Community Safety team undertake HFSCs which are targeted towards particular people, households and postcodes. In terms of information circulation, CPP and the Fire Investigator can be seen to occupy either side of the Community Safety Team. Fire investigations feed in-depth information relating to individual lives which have succumbed to fire. CPP provides broad geo-demographic information on the distribution of lifestyles generated from MOSAIC. For the Community Safety team, MOSAIC shows the specific post-codes in which particular lifestyles can be found and to which HFSCs should be targeted.

The Community Safety team will undertake HFSCs in a way informed by fire fatality investigations by attempting to ascertain whether people drink or smoke to better gauge their vulnerability to fire[143].

7.6 Conclusion

This chapter focused on how human life is thought of and constituted as a subject of governance in the contemporary FRS. I have argued that the subject of governance emerges in a way that is dependent on the regimes of knowledge under which human life is articulated and by the specific forms of intervention that human life is to be made subject to. These two issues of how human life is known and made into the subject of governmental intervention are matters that Foucault engages with in *The Birth of Biopolitics* (2008). In this text, Foucault demonstrates how physiocratic conceptions of the market as naturally regulating facilitated frugal forms of government where state intervention was brought to a minimum.

In alignment with the physiocratic reading of the market and the notion of frugal government, the subject of governance is emergent. Foucault argues that human life is known and governed at its most basic biological limitations: life and death. I have discussed how governing the subject at its most basic biological features has found currency in recent literature (Mbeme, 2003, Rose, 2009). In *The Birth of Biopolitics*, however, Foucault elaborates also on another way in which human life is turned into the subject of governance through the notion of Homo-Oeconomicus. Rather than being known by its most basic biology, Homo-Oeconomicus refers to the understanding of human life by its economic conduct and rationality. The existence of Homo-Oeconomicus reveals that human life can be made into the subject of governance in other ways beyond knowledge on life itself.

Drawing on these multiple renditions of subject-hood, I have examined how different forms of knowledge on life are integrated with one another in making life accessible to the interventions of the

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[143] Ethnographic observation of the Community Safety Team 23/10/11.

FRS. I have argued that how human life is known is tailored to facilitate specific forms of intervention and how this form of intervention can be justifiably enacted. This argument has been applied to investigate the construction of risk profiles by the FRS which identify those most vulnerable to fire risk. These profiles in turn inform decision making on where and to whom preventative resources known as HFSCs should be targeted.

These risk profiles are produced through the integration of two different types of analysis. The first analysis I discussed is generated by MOSAIC software. Through processes of customisation in the FRS, MOSAIC predicts the geographical distribution of lifestyle and highlights the relation between lifestyle and fire. At a broad geographical level, MOSAIC analysis allows the FRS to identify those lifestyles which are most vulnerable to fire risk. Rather than knowing subjects at the level of life itself, it is lifestyle that emerges with MOSAIC as the principle form of knowledge by which to access the subject of prevention in the FRS. Although enacted in the present, prevention is attendant to events in the future. The importance that MOSAIC holds in the contemporary FRS derives from its capacity to make prevention possible by using lifestyle analysis to calculate the vulnerability of human life to risks in the future.

Through MOSAIC, lifestyle rises to prominence as a way to know and govern human life. I have argued, however, that MOSAIC cannot ensure that risk profiles are accurate enough to effectively target those most vulnerable to fire. Although it can monitor individuals and households, MOSAIC is used in the FRS to classify lifestyle at post-code level only. Using a more enhanced, in-depth version of MOSAIC, the FRS believes, might breach privacy laws.

To provide more enhanced risk profiling, MOSAIC information is integrated with information generated by fire investigation. I have described how fire investigations offer a retrospective account of the lifestyles of individuals who have died from fire. By drawing on information from fire investigations, risk profiles harbour an understanding of human life in its most basic biological form: at the level of its

continuing capacity to die. I have argued, then, that what Rose calls 'life itself' (2009, 1) retains

importance in knowing and governing human life in the contemporary. This is especially the case

because investigations into fire fatalities are legally able to develop a profile of the vulnerable subject

based on information that goes beyond the depth offered by MOSAIC classifications. By enveloping fire

investigation information into broader MOSAIC classifications, statements on the vulnerability of human

life can be made to increased depth and prevention can be enacted in a more targeted fashion.

As the contemporary rationale for operation in the contemporary FRS, governing through risk redefines

how human life is made into a subject of governance. I have argued that multiple forms of knowledge

adjoin and accompany one another in making life governable. What I have broadly termed life itself

connects with lifestyle in rendering emergent the subject that is vulnerable. This vulnerable subject can

be intervened upon because of their exposure to risk.

What rises to prominence with prevention in the FRS is a politics *causa-mortis.* Meaning cause of death

in Latin, the term causa mortis holds contemporary significance in legal terms relating to decisions made

by people before their imminent death about their belongings and to whom these belongings should be

given. In relation to FRS risk profiling, information from fatalities occurring from previous fires can be

harnessed to understand the vulnerability of human life to fire risk. Expressed in the form of lifestyles,

risk profiles are drawn upon to target preventative interventions in the present.

Chapter 8. Governing through Uncertainty: The Aesthetics of Everyday Risk

in Hydra-Minerva Exercises

8.1 Introduction

In previous chapters the analytic technologies which have generated accounts of fire risk have been

underpinned by what might be described as conventional forms of calculation. What I mean by

conventional first of all is that the types of calculation discussed in previous chapters are evident

throughout the history of probability logics (See Daston, 1988). I have described, for instance, how

trends have been identified over time and used to indicate the future performance of the FRS in PB

Views. In chapter seven, I showed how MOSAIC technology works to target those most vulnerable to fire

risk by identifying stable correlations between population categories and rates of fire. Ian Hacking might

claim that the analyses heretofore explored in the FRS are organised around the need to tame chance by

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identifying normative curves and deviations in order to foresee potential developments in the future (1990).

By conventional forms of calculation, I am also referring to the forms of data that have been drawn upon by the FRS. All the technologies I have discussed draw, in part, on one common kind of data. This data might be described as 'archival-statistical' (Collier, 2008, 225) in its nature. By archival-statistical, I mean initially that much of the data used are acquired from incidents that the service has attended in the past. The Incident Recording System (IRS) which records data on past incidents of fire has thus been a crucial source of data for all the technologies I have considered up to this point. Along with referring to where data derives from and where data are sourced, archival-statistical also refers to the form that data takes. Much of the data used are quantitative[144] and, as I discussed in chapter four, are compatible or computable with the algorithms used to design the software in the digital infrastructure.

According to Lobo-Guerrero (2011), the risk analysis which I have inquired into in preceding chapters all undertake the same broad manoeuvre. They make uncertainty around the future fungible. Uncertainty around the future is an inevitable fact. In previous chapters of this thesis, risk makes sense of uncertain futures to give the future shape and to render the future an object of knowledge to which strategic action can be directed in the present. Uncertainty can thus be understood as a productive force or a source of creativity out of which risk emerges and risk governance can be undertaken.

In this chapter, however, I discuss the notion of uncertainty to examine how the FRS approaches, thinks of and governs particular types of potential fire events. The types of potential fire events I investigate in this chapter are understood by the FRS as especially uncertain for a number of reasons. These events are uncertain because they cannot be known through the calculative practices and forms of data I have

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[144] It is important to note that although much of the data are quantitative, not all of the data are quantitative. For example, in chapter seven, I described how risk profiles are generated by the FRS are partially reliant on qualitative accounts of the lifestyles of previous fire fatalities discovered through fire investigation.

concentrated upon so far. The reason why these events cannot be known through such data and forms

of calculation is because these events have never occurred before. Events which are understood by the

FRS as particularly uncertain are events which do not have a present 'capta shadow'[145] (Dodge and

Kitchin, 2005, 854) within the data repositories of the service. Data from previous incidents cannot be

sourced to analyse these events.

In addition, fire events are understood as especially uncertain by the FRS if they have not been

accounted for in existing response protocols developed to attend to fires. As a corollary of the lack of

strategic coverage in the form of protocol, these fires are also understood as especially uncertain due to

the set of developments which take place within the fire incident itself. I will detail how response

protocols exist initially in two formats: Standard Operating Procedures (SOPs) and Generic Risk

Assessments. These response protocols guide and structure the actions and decisions of fire fighters in

attending to fire incidents in their real time unfolding. Response protocols, furthermore, are developed

around particular types of buildings or a particular set of developments which might occur within the

fire event itself. Uncertainty surrounds types of events that have yet to be accounted for in these

protocols.

For the purposes of this chapter, increased uncertainty around potential fires derives, then, from the

fact that these futures cannot be known through data collected from previous fire incidents and cannot

be predicted through the established calculative logics I have examined in preceding chapters. Especially

uncertain events are also defined as such by their occurrence in sites which have not been strategically

addressed by the service or the complexity of the event's unfolding has not been accounted for in the

existing strategy of the service.

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[145] Capta shadow here refers to data from previous incidents which could be used to analyse future events.

As the contemporary FRS actively seeks to understand events which cannot be known through archival data, established calculative methods or protocol, it is useful to reiterate my argument that governing through risk represents an appropriation and localisation of anticipatory governing techniques from across a broader range of security organisations. Research on a number of organisations has shown how, post- 9/11, there has been a push to conceive of and imagine contingent events which have never occurred before (See Amoore, 2006, de Goede, 2008, Aradau and Van Munster, 2011). The uncertainty around such events gives impetus to envisioning the future in new ways and, in turn, creates new strategic techniques by which to intervene on the future in the present.

In this chapter, I argue that uncertainty is rendered productive under the contemporary problematisation of the FRS and fire governance in two ways. Firstly, imagining events which are novel gives cause for the development of strategies and security arrangements which are in themselves new. Erikson and Doyle (2004) show how reinsurance and governmental backstops were advanced in the aftermath to 9/11 because events of such a catastrophic, previously unthinkable, nature became suddenly plausible. As I will show in by the development of new response protocols in the FRS, the uncertainty around the future is crucial for the development of new governing strategies. By recognising and harnessing uncertainty, the FRS is able to adapt and assimilate strategy to new types of potential fires.

Underpinning the development of new protocols to secure the future are new types of knowledge which are used to imagine events. These forms of knowledge are drawn upon because the events which they envision cannot be known by data collected from past incidents or through conventional forms of calculation. Frequently found across literature is the argument that security measures were to be informed by more imaginative methods of conceiving of possible risks of the future in the wake of 9/11

(Aradau and Van Munster, 2011)[146]. This argument is sustained by other research which shows how a whole range of alternative knowledge forms or even what has been called 'non-knowledge' (Daase and Kessler, 2007, 411) plays an integral role in generating accounts of risk in the contemporary.

The use of new forms of knowledge to develop new strategies around future fire incidents regarded by the FRS as especially uncertain is examined in this chapter through research into the use of exercises in the FRS. By simulating scenarios of future fire events, these exercises seek to develop and assess new forms of response protocol. The events simulated in exercises are regarded as uncertain because of their novelty and the inability of conventional forms of analysis to capture these events. Specific attention is paid to how these exercises are constructed by the insertion of novel forms of knowledge and technology which work to render visible uncertain futures.

New forms of knowledge and technology are found with the deployment of what is known as Particle Illusion software. A graphic motion technology designed originally for cinema, Particle Illusion is used to imagine fire events both visually and audibly. This audio-visual imagining of fire events is applied to exercises through its insertion into and interweaving with what is known as the Incident Command Centre (ICC). The ICC is the physical site in which exercises take place. Rather than being brought to life merely by the projections of Particle Illusion, the space of the ICC itself is crucial to invoking the material and physical limitations personnel might experience in responding to a real fire. The ICC becomes a theatrical site for the imagining of contingent futures. By the interweaving of these, what may be referred to as, aesthetic forms of knowledge, exercises allow for the assessment and development of new response protocols at the scene of events which have yet to occur and thus possess a degree of uncertainty to them.

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[146] The literature cited here records how, in response to 9/11, US government criticism focused on the failure of security agents like the CIA and FBI to imagine events which have never occurred before. Post 9/11 securitisation, the authors contend, is characterised by a pronounced emphasis on using imagination to envisage and prepare for events which are unknown in their unfolding and consequence.

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Far from being a limit point to anticipatory forms of governance, uncertainty is approached as an opportunity by the contemporary FRS. Through exercises, the FRS is able to draw on new forms of knowledge to envision and imagine potential fire incidents of the future. As with the technologies discussed in other chapters, exercises make fire risk an object of governance and strategisation in the present. I will thus demonstrate how the assessment and development of new response protocols is reliant on the construction and performance of exercises in the FRS. By its harnessing in exercise planning, I argue that uncertainty around the future is crucial for the FRS to govern through risk.

8.2 Governing Through Uncertainty

The foundation for discussion here resonates with de Goede's statement that the uncertainty which surrounds future events has not historically been treated as 'just a threat to be subdued or eradicated, but was always celebrated for fostering entrepreneurial creativity and transformative power' (2008, 159). Rather than something which challenges the plausibility of attempting to manage the future, or an inevitable fact that needs to be eliminated, uncertainty is harnessed to enable the introduction of new forms of governance.

This transformative power that uncertainty possesses is applied to governing through risk in the FRS in two ways. Firstly, uncertainty can be seen to engender new strategic approaches to fire risk. The acceptance that the future may mean the unfolding of new types of fire events enables the formulation of new ways to act in securing the future. New ways to secure the future are enabled by the development of new response protocols enacted when the service has arrived at the scene of an incident. Interwoven with this matter of the emergence and consolidation of new response protocols is the matter of how uncertainty gives motivation for the injection of new forms of knowledge by which to understand and comprehend the future. In this chapter, new forms of knowledge are present in the exercises the FRS deploys. I argue that, along with the development of new strategy, the FRS's

recognition of uncertainty is crucial for legitimating the use of new forms of knowledge which render the future an object of governance.

Steps towards conceptualising uncertainty as a positive force, one which supplies the justificatory basis for new ways to know, and strategically attend to, the future can be found by returning to Foucault's lectures on security (2007). Uncertainty is at the heart of how security problematises governance and intervention in early liberal societies of the eighteenth and nineteenth centuries. This is because security governs populations which are, to an extent, self-regulating. Rather than the precedents of order being pre-determined, it is human life, its interaction with material surroundings and the events which occur from this interaction which establish the normative social order to which security attends. The security apparatus is attendant, according to Foucault, to 'a future that is not exactly controllable' (2007, 20) and to which the security apparatus must adapt itself to.

Security interventions, to some degree, equate to a 'treatment of uncertainty' (2007, 11) then. It is the accidental, uncertain and disruptive events which populations produce that the security apparatus organises itself around. This use of uncertainty to inform security as a new mode of governance is exemplified in Foucault's commentary on town planning. Rather than dictating movement through town design, the circulatory paths of towns conceived of and set down under security must be open to and able to accommodate for the unforeseen and, in Foucault's own terms, 'aleatory' (2007, 11) events occurring due to the free movement of populations. Town planning 'involves organising or anyway allowing the development of ever wider circuits' (2007, 45) which permit circulation to take place simultaneous to creating space for events which disrupt social order to be managed.

Rather than eliminating uncertainty, town planning must necessarily accommodate for uncertainties to allow for adaptive and dynamic forms of intervention. The recognition of uncertainty means that security operates in a way that is adaptable and develops new forms of intervention in lieu of the new

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possibilities that the future can come to hold. The arrangement of new forms of governance due to an acceptance of uncertainty can be seen to inform much of Bigo and Tsoukala's reading of processes of 'insecuritisation' (2008, 170) in relation to the contemporary counter-terrorism apparatus. The authors assess shifts in the institutional configuration of counter-terrorism agencies in relation to the unpredictability and uncertainty around terrorist threats. The uncertainty around the future is aligned to the production of new forms and practices of expertise which serve to manage unease. Regarding uncertainty as an embedded fact that governments must acclimatise to, important organisational restructuring takes place to allow the management of an ever-accumulating catalogue of new potential types of attack.

Although their discussion does not centre on the notion of insecurity, Erikson and Doyle (2004) argue that the uncertainties around the future are influential to recent developments in insurance. Advances in how the world is insured instigate, and rest upon, important shifts in the institutional relations between insurance companies and governments. Exemplary of such a shift is the emergence of the 'government backstop' (2004, 158) since 9/11. As central government funding is available to insure against their collapse, insurance companies have been encouraged to supply cover for events which were previously deemed uninsurable. A supposed surge in potential terrorist catastrophes and natural disasters since the turn of the century in the West have been paralleled, the authors contend, by the development of new actuarial logics to insure the future.

Crucial to the structural transformations exhibited in both Erikson and Doyle's and Bigo and Tsoukala's work is the fact that the acceptance of uncertainty allows for the development and injection of new forms of knowledge to perceive and secure the future. This argument is evident in Collier's work (2008) on the introduction of enactment calculations to gauge the potential consequence of the threat of

nuclear warfare in the Cold War. Collier critiques arguments[147] which claim that uncertainty challenges the plausibility of risk governance by stating that such arguments are only accurate if uncertainty is seen to 'push the limit of a *specific calculative rationality* based on archival statistical knowledge' (2008, 225). Beyond the limit of these rationalities, new forms of knowledge are deployed to address uncertainty in new ways.

The literature discussed above argues that uncertainty cannot be treated by its paralysing effect on the capability of organisations to govern risk. Instead, uncertainty has been harnessed to open regimes of governance up to new directions in attending to the future. As I argued in the last section, this use of uncertainty is somewhat evident throughout the proceeding chapters. Uncertainties around the future have been made into risk projections and then governed in the present. In previous chapters, fire has been captured by its everyday occurrence through mapping, lifestyle analysis and the performance of the FRS itself. In this chapter, I look at the FRS's attendance to types of fire whose uncertainty derives from their evasion of conventional forms of analysis. As with Foucault, I investigate in this chapter how uncertainty allows the FRS to be an adaptive and dynamic organisation which strategically assimilates to new expressions of potential fire risks. The wielding of uncertainty by anticipatory modes of governance is manifest both in the development of new strategic approaches to the future and the interjection of various forms of knowledge through which the future is made thinkable.

Before moving specifically to how uncertainty is appropriated and deployed to facilitate governing through risk in the FRS, the specific types of knowledge which come to the foreground in addressing uncertainty will be explored further. As literature shows, a key element in governments reactions to 9/11 was a pronounced need for more creativity in imagining future disruptive events. As Donald

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[147] The argument being criticised here is espoused by Beck (1992) in his *Risk Society: Towards a New Modernity* in which uncertainties around the future are treated in a wholly negative fashion in relation to governance. Uncertainty draws an epistemological line around the ability of analysis to render the future knowable and governable.

Rumsfeld famously argued, both 'known unknowns' and 'unknown unknowns' (See Daase and Kessler,

2007) need to be accommodated for in planning security measures for the future. The way in which

uncertainty is captured is through the introduction of new forms of knowledge which are drawn upon to

analyse risk.

Rather than solely reliant on statistical analyses which articulate the future through trends and

correlations, anticipatory forms of governance are increasingly informed by knowledge which has a

more aesthetic quality to it. By aesthetic, I mean knowledge which derives from and penetrates human

senses. Along with being conceived through mathematical and algorithmic equations, the future is now

evoked and invoked through speculations about its potential visual and audible output[148].

The embedding of aesthetics into the practices of anticipatory governance has been the subject of

discussion in pre-existing literature. Der Derian's (2001) work shows how cinematic and computer game

technologies have been drawn upon in envisioning post Cold War threats in the U.S military. Elsewhere,

de Goede and Randalls (2009) focus discussion on public art which works either to justify political acts or

render such actions beyond democratic dialogue through offering representations of catastrophic

futures. In the FRS, these audio-visual technologies are evident in the use of Particle Illusion software

and the ICC to create exercises.

With this enwrapping of futures within sensory based knowledge, Aradau and Van Munster argue that

subjects are 'invited to inhabit the future and make use of sensorial knowledge' (85, 2011) in the

contemporary security culture. Resonating with Adey and Anderson's claims about the role of affective

atmospheres in exercises (2011a) the idea of utilising senses to imagine the future has become central

to how the FRS develops exercises. Along with the visual and audio rendering of futures, I will show in

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[148] To some degree, this has been seen through previous chapters. Thus, chapter five demonstrated how risk is visualised through mapping. Chapter six, on the other hand, showed how the performance of the service can be visualised through the pyramid structure found in PB Views. These visualisations, however, depend on conventional forms of statistical analysis.

this chapter how anecdotal reasoning is found in the use of fire fighter personnel's experiential knowledge to instigate and construct exercises on events which are yet to be accounted for in FRS strategy. As such, aesthetic knowledge does not just refer to the use of audio-visual technology but also refers to the experiential knowledge of FRS personnel.

The use of exercises in the FRS suggests that forms of knowledge alternative to those discussed earlier in this thesis become crucial to governing through risk. As in other chapters, however, the risk projections that exercises make must be validated and verified by personnel to become a legitimate way of informing strategy. With risk profiling discussed in the last chapter, for instance, I showed how fire fatality investigations are drawn upon to improve the accuracy of risk profiles created by MOSAIC analysis. In this chapter, exercises are made into a legitimate means of informing decision by an emphasis on the ability of exercises to imagine future fire events realistically. This notion of realism and the necessity of aligning imagined events to how fire incidents realistically unfold underpins different stages in the construction and performance of exercises. The specific technologies drawn upon are deployed because of their ability to depict incidents under the parameters of accepted, consensual views that staff hold on the reality of fire events. Thus, Particle Illusion invokes the 'real' force of fire through fire graphics. Alternately, the physical site in which exercises take place, the ICC, is crucial to imagining the real obstacles which might complicate fire fighter response. Together, the audio-visual projections of Particle Illusion interweave with the physical space of the ICC, to paraphrase Aradau and Van Munster (2012), to constitute the time and space of the event being simulated. Overall, by promoting how it allows future fire events to be imagined realistically, the exercise becomes a legitimate means by which fire risks which are unknown become the object of strategic appraisal and intervention in the present.

8.3 The Emergence of the Contemporary Exercise: Harnessing Uncertainty, Structuring Decision

In what follows I concentrate on the construction and deployment of exercises in the contemporary FRS. However, the use of exercises is rooted in the history of the FRS. In chapter two I described how exercises have been integral to developing fire brigade strategy both in the time before the blitz and in the nineteenth century. In these periods, what are now known as exercises were known as drills. These drills did operate by imagining fire events but the scenarios constructed in drills depicted fire events in ways that corresponded to the statistical representation of fire. For instance, Braidwood trained fire fighters in the early hours of the morning 'as most fires happen at night' (1866, 100). In line with how the representation of fire resonated with statistical accounts of fire events, drills did not seek to advance new strategic approaches to fire either. Drills in the time of the blitz, for instance, worked to train new recruits who formed the Auxiliary Fire Service (AFS). Drills thus rehearsed established strategy and tested the physique of fire fighters.

Even though a clear link can be drawn to the deployment of drills in the past, the emergence and purpose of exercises in the contemporary is indebted to the policy of the twenty-first century. The policy which introduced what is now meant by exercises derives both from within the FRS with the *Fire and Rescue Services Act* (2004) but also from wider government legislation such as the *Civil Contingencies Act* (2004) in 2004. By this different legislation, exercises have become central to how the FRS develops and prepares protocol for responding to future contingencies.

The service's mandate and collaboration with other emergency responders was expanded by this legislation. The FRS now plays an important role in responding to terrorist attacks and natural disasters. Due to their absence from everyday life, these events to which the FRS is now attendant possess a character that is more unknown than fire risk. As Der Derian's (2001) work from the US suggests above, exercises have been lauded in their ability to simulate and visualise such events even though the unfolding of such events has yet to occur and have potential consequences that are incalculable.

Similarly, exercises are seen by the FRS and other emergency responders as a pivotal means by which to cultivate the imagination of risk planners in assessing the capacity of emergency services to mitigate potential events like terrorism and natural disasters.

Although the new significance attributed to exercises has been generated due to the FRS's attendance to a new catalogue of risks since the *Fire and Rescue Services Act*, exercises have certainly re-negotiated the service's approach to fire risk as well. The licence that exercises give to imagining futures which are catastrophic and disastrous has been re-applied and tailored to the appropriation of novel kinds of fire risk. Along with being used to explore fire events which have not yet been experienced, exercises are crucial in developing new strategic approaches to fire risk. Rather than centring on physical fitness or rehearsing established strategy, new forms of strategic intervention on fire are created by creating new structures of decision making and response protocol which can be applied to the 'real time' unfolding of a fire.

In FRS literature (Communities and Local Government, 2008), this preparedness through protocol is known as Incident Command. Incident Command performs what the service understands as its 'operational risk philosophy' (ibid, 63). In alignment with the precedence that anticipation now assumes in the FRS, this philosophy is summarised as conditioning fire fighters to 'think before you act rather than act before you think' (ibid, 64).

In the terminology adopted by the FRS, the ends which exercises serve are to both assess and develop response protocol under this operational risk philosophy. To achieve both the assessment and development of new protocol which will respond to the real time unfolding of a fire incident, protocol is defined and structured into three broad categories. Firstly, what is called 'generic risk assessment' (ibid, p20) is examined and developed through exercises. Generic risk assessments assess how well fire

fighters can comply with legal structures and guidelines which outline how to mitigate fires which occur at particular sites.

Demonstrating how uncertainty is put to use and incorporated into the risk analyses of the service, the other two types of protocol scrutinised in exercises assess and develop the capabilities of fire fighters where it is necessary to go beyond the limitations of established structures for strategic action in responding to fire events. Firstly, dynamic risk assessment (ibid, 67) is found which examines strategic decisions made in adaptation to the unique, complex and unforeseeable set of developments which might characterise an individual incident. What this dynamic risk assessment refers to, according to one member of staff, is how strategy is implemented by operative staff 'thinking on their feet'[149] where an incident's unfolding transcends the limits of established protocol.

The last form of decision making assessed and developed in exercises is what is known as 'analytical risk assessment' (ibid, 68). Decisions made under the structure of analytical risk assessment show a similarity to dynamic risk assessments in that decision making is understood here as an adaptive and malleable action. Analytical risk assessment allows strategic interventions to fluctuate out of a necessity to adapt to the peculiarity of an incident which is unaccounted for in existing guidance. In contrast to dynamic risk assessment, analytic risk assessments concentrate on how decision is used to formulate coordinative response between fire fighters. It is on the basis of both dynamic and analytical risk assessment that exercises will be used to re-appraise how strategy should be enacted through decision and also develop protocol for events which have not been accounted for in pre-existing strategy.

That uncertainty is used to develop new strategic approaches to fire risk is reiterated by the types of incident imagined in exercises. Exercises concentrate on events which are known as 'risk critical' (ibid, 9) incidents. The components which together constitute a risk critical incident are multi-faceted. They are

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[149] Interview conducted with Learning and Development 20/10/11.

first isolated from routine incidents in their severity. Incidents considered to be severe encompass; fires at a height, fires in which breathing apparatus is used by fire fighters and special service incidents[150]. Apart from the potential severity of the risk faced, the incident's intensity must be gauged by its 'time sensitivity' (ibid, 9). Time is understood here as the period available in which strategic decisions must be made in relation to an incident's development. In risk critical incidents, this period is exceptional in its constricted character; meaning decisions will have to be made quickly.

Leading on from their time sensitivity, risk critical incidents are defined by their complexity. Structured by the constricted time in which such incidents unfold, this complexity equates to the multiplicity of variables entering into the consideration of fire fighters as an incident unfolds. The ability of fire fighters to cross manage resources must be evident here as different resources will be deployed at a simultaneous time in responding to an event which consists of multiple types of danger. Lastly, a risk critical incident contains a moral pressure that, although evident in most incidents attended, is more pronounced in some events than others. This moral pressure refers to the danger to human life that events present. The question of life and death means casualties to both fire fighters and members of the general population.

It is evident in the description of these events that exercises seek to bring to light and present potential fire incidents whose uncertainty exceeds routine fires. Uncertainty takes on two interpretations within these incidents then. Uncertainty first appears because the events transcend the normality of events to which the FRS is usually respondent. Events imagined in exercises are severe in terms of the site at which the fire occurs and the risk the fire presents to human life. In addition, uncertainty is defined by the set of developments which might unfold in the 'real time' of such incidents. Complexity and time sensitivity assert that what has been referred to as risk critical incidents are characterised by a multitude

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[150] Special service incidents fall within the coordination mandate of the FRS with other emergency responders such as the Police, Ambulance services and the Environment Agency.

of unforeseeable variables and the need to enact decision in a way that accommodates for the aleatory nature of such events.

8.4 Sourcing Uncertainty: Data Collection for Exercises

Before describing the exercises routinely carried out by the service, it is important to indicate the forms of data which are used to construct exercises and how exercises are instigated in a way that both utilises and addresses uncertainty. The sources of knowledge and data can be divided according to their specific purpose in relation to exercises. Firstly, knowledge will be used to instigate and justify the formulation of exercises around specific, potentially risk critical, incidents. The experiential knowledge of personnel is used here to imagine newly emergent fire risk scenarios and articulate how such risks present a challenge to current strategy. Secondly, sources of data and analytic tools must be identified which actually facilitate the construction of exercises.

Turning first to the instigation of exercises, the most important source for identifying newly emergent risks will be the experiential knowledge of personnel. Those who construct and oversee the deployment of exercises will have the most authority in identifying new forms of fire risk[151]. These new risks, as explained by the Training Coordinator, will emerge simply from living in the areas that fire-fighters simultaneously protect. The Training Coordinator gave an example when driving off-duty past a newly constructed COMAH[152] site that was not accounted for in the service's generic risk assessments. Subsequently, an exercise was constructed around the specific risks inherent to the site. The recognition of potential fire risks relies initially on the experiential knowledge of staff and an indication by staff of the service's unpreparedness should a specific type of fire unfold in the future.

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[151] Those with the most authority in constructing exercises are members of the Learning and Development Team, particularly the Training Coordinator and The Incident Command Centre (ICC) Technician.
[152] COMAH is an abbreviation for Control of Major Accidents and Hazards. A COMAH site is a place or building understood as risk intensive.

Additionally deriving from the experiential knowledge of the service, data acquired from previous

incidents regularly highlights existing uncertainties around potential risks by showing gaps in the current

preparedness of the service. Along with acting in anticipation of and sensing new fire risks, those

responsible for exercises emphasise how 'we can also be reactive...we might go to incidents... we see

certain risks or through the debrief process[153] (and) then (these risks) are actions placed upon ourselves

in training (exercises)'. Exercises are developed around fire events due to a process described by the

Training Co-ordinator where 'we've (FRS staff) attended something, we've seen an opportunity for

learning and we've fed them into the system'[154]. Reflection on past events and the ability to

acknowledge unpreparedness within past events is a crucial source for the formulation of new exercises.

This feeding into the system referred to by the Training Coordinator involves a sort of transformation of

experiential knowledge into data computable for the construction of exercises. The generation of data

for exercises will involve visiting the sites which have highlighted existing gaps in current strategy. Two

types of data are important here. Firstly, both quantitative and qualitative data relating to different

aspects of sites need to be recorded. This data are known as Site Specific Risk Information (SSRI).

Included in SSRIs is data on the material, infrastructural contents of the site and the life risk of the site.

Life risk simply refers to the number of people who occupy the site at different times of the day. Life risk

allows a quantification of those who would be exposed should a fire occur. The sites are described

ultimately in SSRIs by categories such as structural vulnerability to fire and consequent risk to life. The

recognition of novel types of fire risk by the experiential knowledge of staff is thus translated into a

conventional risk analytic format through SSRIs.

 SSRIs are deployed in the construction of exercises in accompaniment with an equally important visual

accounting of sites. As described by Training Coordinators, this visual element simply involves 'going to

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[153] In Fire and Rescue Service terminology, a de-brief report refers to a review of the tactics and strategies employed in attendance to a specific incident.
[154] Interview conducted with Learning and Development 20/10/11.

the sites and taking photos of it'[155]. To suit the desired representation of incidents however, these photos must account for different angles from which fire might be viewed. As I will discuss in more depth later, the exercise suite used in the FRS, referred to above as the ICC, dictates that four perspectives of the site must be captured to allow a 360 degree perspective on the site.

I have outlined the key sources and processes for both instigating and constructing exercises in the FRS[156]. But how is the formulation of new exercises legitimated? This question of legitimacy can contribute to discussions around uncertainty where it is treated in relation to the protocol which currently exists to enact response to a fire at a specific site. Recognition of new and unaccounted for risks and the justification for new exercises rely on a calculation against existing strategic guidelines. Risks which will be imagined in exercises emerge where no current plans can be found in the service for this specific type of risk. The most important criteria for calculating a lack of preparedness for potential incidents in the service comes in the form of two strategic guidelines. Standard Operating Procedures (SOPs) provide a guideline for what strategic approach should be taken in accordance with the specific variables found at a fire incident. With regards the uncertainty implicit in the management of risks, the Training Co-ordinator stated that 'the SOPs are (established) on a three yearly review basis, but (are) again prompted by local, national and regional events'[157]. As such, SOPs are created in adaptation to newly emergent risk scenarios that are yet to occur. In addition, the Site Specific Risk Information (SSRI) referred to above is also made for incidents differing from one another by the variables which are present at the site and the locality in which a fire might unfold.

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[155] Interview conducted with Learning and Development 20/10/11.
[156] Other sources for exercises do exist such as those supplied by the Fire Service College and Civil Contingencies Unit.
[157] Interview conducted with Learning and Development 20/10/11.

In the words of the Training Coordinator; 'SOPs and Site Specific Risk Information...will form a lot of the work initially before we start preparing the exercises'[158]. SOPs will contribute to the formation of exercises. SOPs give exercises criteria through which to assess strategy. SSRIs provide a format for the translation of experiential knowledge into conventional forms of quantitative and qualitative data. Both SOPs and SSRI's, however, also act as yardsticks for locating gaps in the response strategy of the service. Identifying these gaps allows for the justified creation and construction of exercises by which to adapt to risks that, in the words of the Training Co-ordinator, 'we don't know about'[159].

The creation of new exercises is legitimated then by highlighting risks that are unaccounted for in current strategy. Rather than strategic guidelines such as SOPs and SSRIs representing an unbreachable limit to the possibilities of risk analyses, pre-existing strategic knowledge is treated in a reflexive way. SSRIs and SOPs are used to indicate risk scenarios that are characterised by uncertainty because these scenarios are unaccounted for in current strategy. As such, recognising uncertainty becomes the point of generation for new forms of analysis through the deployment of exercises. It is important to reiterate that incidents which will be addressed through exercises cannot be encapsulated by data referring to past events which is expressed in conventional, archival statistical fashion. Instead, new forms of knowledge interject to both understand the potential consequences of new risks and also represent the space in which such risks might unfold. What the articulation of new risks in exercises depend upon is the ability of fire fighter personnel to utilise their experiential knowledge in imagining how fires might affect sites which have not been strategically addressed. This is accompanied, moreover, by the establishing of an aesthetic-visual element in representing the potential of risks by taking photos of sites. These two forms of knowledge which instigate and form the basis for exercises will be elaborated on in the next section in terms of how they work to bring exercises into practice.

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[158] Interview conducted with Learning and Development 20/10/11.
[159] Interview conducted with Learning and Development 20/10/11.

8.5 Constructing and Performing Hydra-Minerva Exercises

The types of exercises important to this research are those which take place in the FRS's Incident Command Centre[160]. This is a two-storey building. As I show in more depth below, the bottom floor is where the actual exercise is performed. This floor is divided into four Syndicate Rooms which are informally known as 'pods'. The top floor is divided into two separate rooms. Firstly, there is a Briefing Room in which an initial description of the incident that the exercise will depict and imagine is given to staff participating. After the exercise is carried out, the Briefing Room is used to debrief and assess the performance of staff partaking in the exercise (See figure nine and ten).

Adjacent to the Briefing Room is the Control Room. The Control Room has multiple purposes. This room acts as a kind of backstage from which the scenario being played out below is orchestrated and coordinated. The Control Room is used to project the scenario's development visually into the Syndicate Rooms. Furthermore, the Control Room is used to scrutinise the strategisation, decision making and activity of those taking part in the exercise.

Overall, the Control Room consists of twelve screens covering two walls. Four screens are laid out across the bottom of the wall. Running upwards, another two layers of four screens are found. The bottom row of screens are the control computers. These computers are used as remote desktops in which the audio-visual elements of the scenario are uploaded and transferred into corresponding screens in the Syndicate Rooms. Through this connection between the Control Room and Syndicate Rooms, those orchestrating the exercise can project the simulated incident's development to those taking part in the exercise in the rooms below.

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[160] The FRS does take part in other exercises as part of the Local Resilience Forum. Rather than taking place internally, exercises taking place through the Local Resilience Forum involve assessing and developing coordination protocol between the FRS and other emergency responders such as the police, ambulance services and the Environment Agency. These exercises are designed around events such as terrorist attacks and natural incidents such as flooding.

The additional two layers of screens are connected to CCTV cameras in the Syndicate Rooms. The first layer of screens focus on the activity in each Syndicate Room whilst the second and highest row monitor the movement between the pods, giving a seamless perspective on the movement across the whole of the bottom floor of the ICC. Further to CCTV connections, the Control Room and the pods below are connected by microphones. Not only can the action and movement of exercise participants be monitored visually but the negotiations between participants in making decisions and enacting strategy can be audibly recorded.

The technology present in the Control Room also allows a temporal structuring of the incidents occurring below. This structuring occurs through injections which are distributed from the Control Room into the Syndicate Rooms. These injections amount to different developments which occur within the event. For example, the member of staff known as the ICC Technician will manage the visual unfolding of the scenario through projecting images of the incident onto the screens in the pods. The extent and development of the incident will be portrayed, according to the ICC Technician, by 'ramping up or ramping fire down depending on their (exercise participants) actions'[161]. It is in the Control Room, furthermore, that decisions are made about when new role players should be introduced into the scenario the exercise portrays. Injects referring to visual changes in the exercise and the introduction of new role players in the exercise will be discussed in more length below.

Two types of exercises are undertaken in the ICC. These exercises are known as Hydra and Minerva and make up the informal name for the ICC itself: the Hydra-Minerva suite. Although contained in the same space, these exercises are different in the format they possess and also the purposes which they serve. The Hydra format is used to construct what are known commonly as table top exercises (See Schoch-Spana, 2004). In the Fire and Rescue Service, the Hydra exercises are used to assess the communicative

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[161] Interview conducted with Learning and Development 20/10/11.

and reasoning skills of higher level staff in lieu of incidents and events whose build up and consequence are long term.

The events depicted in Hydra exercises tend not to address novel types of fire events but to imagine wider political problems which may affect the service. One table top exercise I observed involved simulating the build up to, and consequence of, an event in which FRS staff went on strike. Participants in the exercise were made to negotiate with statements made by FRS staff union representatives in trying to prevent the strike. As negotiations collapsed, participants then had to theorise around how to ensure sufficient protection could be provided in the advent of a fire.

Rather than any visual portrayal of emergency, staff are confronted in Syndicate Rooms by two types of word transcript. One word transcript will give a description of the event. The type of incident occurring will be outlined along with the location of the incident and members of population who are affected. Along with this description of the incident, the other word transcript will offer options for decision making about how to act strategically at regular intervals[162].

Hydra exercises allow managerial staff to test their preparedness for a range of events related more to organisational issues than fire incidents. The way scenarios unfold in the Hydra format cannot be described as real time. Instead the development of an incident can be stopped and started at the request of personnel to allow for reflection on particular complexities which emerge. Once Hydra exercises are over, new protocol for wider political and organisational issues which affect the FRS will be developed.

Due to the limitations concerning the timeline of scenarios, the lack of visual representation in Hydra exercises and Hydra's lack of relevance to issues directly related to response protocol, I focus solely in this chapter on Minerva exercises. As oppose to higher levels of management, the types of exercises

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[162] Ethnographic observation of Hydra exercise 16/10/11.

performed through Minerva are deemed by the Training Co-ordinator as 'more relevant to your

supervisory officers, your crew managers and your watch managers'[163] who will actually be in

attendance at some time in the duration of a fire incident. Minerva is an exercise facility assimilated to

'on the ground'[164] tactical matters which arise in responding to fire incidents as they occur. In contrast

to Hydra, Minerva fulfils a need to structure exercises in a way that is attached to a conception of how

incidents might appear in reality. As such, the Training Co-ordinator described the real time character of

Minerva through the following comparison; 'ultimately, what we would do is take six engines off the run,

go set fire to a building and run the incident that way, this (Minerva) is the next best thing to simulate

that'[165].

Rather than being confronted with a scrolling transcript as in Hydra exercises, Minerva constructs

simulations which, for the ICC Technician, are 'as real as possible, replicating the complexities of real

events'[166]. In contrast to Hydra, Minerva contains a visual element which, according to staff, enhances

the sense of realism in exercises. This visual element derives from photos either taken at incidents which

have happened or visits to potentially dangerous sites. As the Training Co-ordinator notes, 'we do have

photos that can be put in from incidents that have really happened' but 'the problem is... if you want to

put that into an exercise... you need to take photos of the building before its on fire'[167]. What are

preferred are photos from sites which have shown potentiality for risks unaccounted for over photos

from previous incidents.

Reiterating the role of exercises to imagine futures which exceed the limit of current protocol and are

thus unknown to strategy, new technological interventions are required to visualise the future in

exercises. It is at this point that software called Particle Illusion becomes integral to the representation

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[163] Interview conducted with Learning and Development 20/10/11.
[164] Interview conducted with Learning and Development 20/10/11.
[165] Interview conducted with Learning and Development 20/10/11.
[166] Interview conducted with Learning and Development 20/10/11.
[167] Interview conducted with Learning and Development 20/10/11.

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of uncertain and novel risks in exercises. Developed initially for cinema, Particle Illusion is a graphic motion technology which is used in the service to offer an audio-visual representation of fire events. Through Particle Illusion, the photos taken at sites will be sequentially synthesised to form a panorama of the site at which the incident is imagined to have occurred. On top of this panorama, an in-built 'fire graphics' component in Particle Illusion presents flames and smoke, visualising the extent of fire and the gradual deterioration of buildings at the site. Other data interject to enhance the real-life character of fires simulated. The force of fire will be envisaged by factoring in how wind speeds determine the velocity and spread of fire. What is more, the so called 'weight' of the fire is represented according to the interaction the fire would have with the material contents found at the site. In addition, the sound of fire will be inserted through an audio component. Overall an audio-visual clip of around thirty seconds will be created, looped and adjoined to clips showing the initial intensification of fire and its decrease to intimate eventual control through the response of the FRS (See figures eleven and twelve)[168].

It is evident from the use of Particle Illusion software that the supposed realism used to invoke events which are uncertain, novel and transcend the limit of pre-existing strategy depend on both a temporal structuring of an event and an ability to replicate the sensual effects of an event. The events represented are invoked through delimiting its duration from start to finish in terms of initial cause, the fire's effect on the built environment and the gradual decline of a fire as the service responds. To imagine events which have yet to unfold in reality, moreover, the atmosphere of such events must be rendered. Rather than playing on the anxieties and stress levels of staff as Adey and Anderson's (2011b) observations show in the context of Civil Contingencies exercises, atmosphere equates here to the sound a fire might make and the effect natural elements such as the wind would have on how a fire

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[168] Ethnographic observation of the ICC Technician 25/10/11.

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might unfold. What Particle Illusion software provides the FRS with is the ability to appropriate and envision, in minute detail, incidents which have yet to occur.

Once the visual, temporal and sensual invocation of the incident is created, Minerva exercises themselves can take place. The actual, temporal development of the scenario itself will depend on a mutual structuring between two inter-related sites of action; the Control Room and staff participating in the exercise itself in the Syndicate Rooms. Within and between these sites, the exercise is imagined through coordination between two technologies. On one hand, Particle Illusion offers the audio-visual invocation of the event. This is interwoven with the physical space of the Incident Command Centre itself.

Exercises start in the Briefing Room. Personnel who will describe the incident which is taking place to those about to take part in the exercise. Variables of the incident are outlined here including the location of the site, the potential material contents of the site and the possible risk to human life. It is at this initial point also that operative roles will be delegated to participants. This involves designating the Incident Commander who will have overall authority in strategic decision making about how to attend to the fire. The roles of fire fighters, fire engine drivers, Watch Managers and Crew Managers will also be designated here. The delegation of these roles and duties simultaneously acts to further structure the timeline of the scenario in a way assimilated to real events. The Incident Commander will be the first to arrive at the scene with a driver and two fire fighters. In subsequent stages, the Watch Manager will arrive with more fire fighters and lastly the Crew Manager with additional resources[169].

Once these roles are distributed, the route to the incident will be staged. In those Minerva exercises I observed, imagining the route does not involve simulation of driving to an event. Instead, the spatial divisions of the ICC itself will be used. Before arriving at the Syndicate Rooms, participants will be

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[169] Ethnographic observation of Minerva exercises 26/10/11.

stopped to replicate the driving time to an incident. Using spatial divisions of the ICC adds to the sense

of realism invoked in the exercise and helps to make the exercise a means of developing response

protocol. In Aradau and Van Munster's terms 'the clear delimitation of space' (2012, 103) used to

envision travelling to the site of a fire acts to 'reframe the unknown, uncertain and unknowable future

into the "thinkable" materialities of space' (ibid). In the case of FRS exercises, this spatial division is

important due to the information gathering that takes place in journeys to real events. Through a

facilitator who acts in mediation between participant staff and the Control Room, those responding to

the incident will be supplied with more information on the fire. The first element of assessment takes

place here. Participants in the exercises are examined in terms of how information gathered is used to

inform strategic decisions before arrival at the site. Decisions revolve here around, for instance, what

kinds of equipment will be needed in accordance with what is known about the incident before arrival.

In the scenario, the arrival at the scene of an incident equates to arriving in the first Syndicate Room. It

is at this point that participants will be confronted by the fire graphics produced by Particle Illusion.

Reiterating how spatial divisions of the ICC itself contribute to the realism of the scenario, each of the

four Syndicate Rooms present a different angle on the site at which the fire is taking place. As the rooms

are partitioned from one another, the limitations to vision which a real site would create are replicated.

The Incident Commander arriving at the scene first will navigate their way through these rooms to attain

a 360 degree perspective on the site. This enables initial decision making on the cause of the fire, its

preliminary location in the site, what potential hazards can be identified and if any human beings are

vulnerable[170].

Apart from being co-ordinated by spatial, visual and temporal structuring, the aligning of possible, yet

uncertain, events with the accepted reality of fire incidents is re-enforced as the scenario develops by

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[170] Ethnographic observation of Minerva exercises 26/10/11.

the injection of role players from the Control Room. A host of different members of the public could be introduced during the scenario. According to the Training Co-ordinator[171], this has in the past ranged from drunken football fans to angry farmers demanding answers while their livelihood is being swept away in the flames. Most commonly, however, a fire warden for the site is introduced. By their physical interjection, this role player might first serve to disturb and complicate decision making by testing the ability of the Incident Commander to act when unforeseen variables are introduced. Simultaneously, however, role players are an additional source of information. Rather than being supplied automatically, staff must inquire in different ways to gather information about the event. For example, if initial data have suggested that hazardous materials might be present at the scene, the Incident Commander should inquire after the exact nature of these materials. Although complicating the scenario initially then, the introduction of role players can become central to strategic decision making.

Being deployed from the Control Room into the Syndicate Rooms, the number of role players and FRS personnel accumulate as the scenario develops. This is accompanied by other injects in the exercise such as an intensification of the audio-visual representation of fire. From the Control Room, a number of new injects will interfere in the scenario. The direction and velocity of the fire might change or spread, the presence of human life in the site itself might be indicated or the site might deteriorate in a way that endangers fire fighters. What the injection of new personnel, role players and the audio-visual development of fire serve to do here is further complicate the incident in different ways. At this point, the uncertainty surrounding the event is not understood merely by its novelty in terms of pre-existing strategic frameworks but by the aleatory and unforeseeable developments a fire event will have. The uncertainty around the event is not understood only by its transcending of strategic guidelines. Rather, the unknown nature of the event is reinforced by a representation of the event's complexity and the occurrence of unforeseeable developments.

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[171] Ethnographic observation of the Training Coordinator 25/10/11.

As Adey and Anderson observe, the injects described above are 'about letting the contingencies of response go in order to encourage improvisation and responsive decisions' (2011b, 2879). With regards to the Incident Commander confronting this ever-increasing, unforeseeable complexity, the Training Co-ordinator notes that 'what is being tested here is how well this complexity is broken down into sizeable chunks'[172]. What assessment focuses on is how the Incident Commander can reorder the strategy of the service in response to the scenario's changing development over time. The Incident Commander's decision making involves distributing roles for personnel across the incident or what is known as 'sectorising' (2008, 31) response. In the Control Room, what is being scrutinised is how well 'spans of control' (2008, 22) are established and managed by the Incident Commander. Good performance here will be gauged by how well the responsibilities of the Incident Commander are increasingly reduced by distributing responsibilities to other personnel taking part in the exercise. From initial arrival at the scene, the responsibilities of the Incident Commander should gradually decline as the fire itself grows ever-complex and new staff arrive in the Syndicate Rooms and are given specific strategic duties.

Anchored by the spatial divisions of the ICC itself, a strategic structuring of the incident is put into practice through sectorisation. As the incident grows complex through the visual introduction of new variables and developments, the decision making of the service should be enacted in adaptation to this complexity. Adaptation in response to the exercise's development involves a multiplication of roles that are being played. The Incident Commander's role here is to successfully cross-manage and supervise the different actions which are taking place simultaneously. It is the distribution of responsibilities, participant's success in fulfilling responsibilities designated to them and the Incident Commander's ability to manage the multiple strands of FRS response that is being monitored through exercises. Assessments of how response is developed through these multiple actions will form the basis for cultivating new response protocol for potential fire events of the future.

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[172] Interview conducted with Learning and Development 20/10/11.

By the matching of the ever-complicating character of the event with the differentiation of roles in response, it is evident that uncertainty around how the event might unfold is not perceived as something which paralyses decision making. Instead, uncertainty becomes the necessary grounds of possibility for strategic innovation. What are advanced through exercises are new complex decision making practices which can enact strategy even when the development of an incident cannot be easily foreseen.

The development of an exercise, and how uncertain events are figured into the service's strategic guidelines for response, is ultimately dependent on corresponding activity between two sites which enact the exercise; the Control Room and the Syndicate Rooms. The Control Room can be likened to a kind of backstage from which the scenario being played out in the Syndicate Rooms is partially orchestrated. As I have noted, it is from the Control Room that the scenario is envisioned in terms of what an event looks like, its severity and even what it sounds like. In terms of the scenario's narration or development, the Control Room is essential in deploying what have been described as injects above. These injects give an event its temporality and, as Davis's (2003) argument also shows, work to complicate the incident in different ways by operating in a manner that replicates the aleatory and uncertain way in which fires might unfold. Both the deployment of new role players and the audio-visual development of the fire itself act as injects which will intervene from the site of the Control Room to arrange the temporal unfolding of the incident. In turn, staff in the Control Room appraise the decision making practices of those taking part in the exercise.

These injects, however, are not autonomous from other on-going processes in the Syndicate Rooms and are not the sole controlling factors determining how the exercise will develop. Instead, a reciprocal tie is established between the actions of the Control Room and the Syndicate Rooms. How the scenario proceeds is by a relation in which, in the words of the ICC Technician, 'you sort of…use your timescale

dependent on the individual (exercise participant) to get more out of the exercises'[173]. As much as staff

taking part in scenarios will make decisions in a way that is conditioned by injects from the Control

Room, these injects themselves will be deployed in a way that is conditioned by the decisions made by

staff taking part in the exercise. The relation between inject deployment and decisions made by staff

taking part in the exercise reiterates Adey and Anderson's claim that: 'Decisions themselves open up

unexpected possibilities rather than close them down' (2011b, 2897). The decisions of staff taking part

in exercises will affect what injects are deployed from the Control Room to envision the development of

an incident. Along with the decision making of those in the Control Room, how an exercise develops is

partly dependent on the decisions made by participants in the exercise itself.

The scenario that the exercise portrays is structured around a dynamic timeline which is continually

made and remade by the negotiations between the two on-going hubs of activity and decision found in

the ICC: the Control Room and the Syndicate Rooms. Across the duration of the exercise, an incident's

development is described by the ICC Technician as 'very flexible' and 'very fluid'[174]. The ever-developing,

shifting temporal structure of an incident is something understood to enhance an exercise's capacity to

address future events which cannot be accounted for by those forms of analysis discussed in other

chapters of this thesis. The following example was provided to explain how uncertainty is encompassed

in the temporal structuring of exercises. In usual response times, fire-fighters can expect 'a second

appliance (to) come in two minutes'[175] after the first appliance has arrived. The Training Co-ordinator

goes on to note how 'we might hold those appliances back'[176] in exercises to increase the complexity of

the incident and to examine how staff responding will negotiate with such a development.

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[173] Interview conducted with Learning and Development 20/10/11.
[174] Interview conducted with Learning and Development 20/10/11.
[175] Interview conducted with Learning and Development 20/10/11.
[176] Interview conducted with Learning and Development 20/10/11.

The co-ordination between the Syndicate Rooms and the Control Room, which produces a dynamic and complex timeline for the exercise, does not only work to enhance the uncertainty around events depicted. Instead, co-ordination is believed to enhance the sense of realism in exercises. Unforeseen interruptions to resource arrival or the spread of fire, for instance, are understood to have occurred in past events and are thus a means to tie the imagination of those constructing exercises to the accepted reality of fire incidents. Initially, the technology of primary importance here is Particle Illusion and its capacity to visualise the future and make the future audible. Through this audio- visual component, the exercise participant is enveloped into a situation which is realistic in reflecting the complexity of actual fire incidents.

Uncertain events are not only brought to life and rendered emergent through the temporal and audio-visual structures of the exercise. As has been stressed, the imagining of events is also reliant on the physical space of the ICC itself. The very materiality of the ICC is interwoven with Particle Illusion's audio-visual representation of an exercise in giving the event depicted a sense of realism. Resonating in ways with Amoore and Hall's commentary on the theatrical significance of border control (2010), the scenario transforms banal spaces into imagined critical stages and complications of an incident. A corridor becomes equivocal to the travel time to an incident at which point crucial information can be acquired. Similarly, partitions between Syndicate Rooms are used to represent different perspectives on the site of a fire. These partitions work to complicate both decision making and the development of response strategy. To an extent, the space of the exercise itself becomes the props by which the exercise's narrative is structured. Through the symbolic quality that the ICC takes on, the real time of an event as imagined in an exercise is accompanied by a sense of real space. It is this meeting of time-space that renders the heretofore unknown event manageable and an object of new forms of strategic appraisal.

Co-ordinated by the various intersections between spatial, temporal and visual structures, the playing out of exercises highlights an increasingly common aesthetics of risk analysis that is used to address, and reap the benefits of, uncertainties around future events. These uncertainties are obfuscated from more conventional forms of risk analysis discussed in preceding chapters. From the instigation and justification of exercises to the point of an exercise's performance, new forms of knowledge come to intervene in FRS analysis. Analogy and experience are used to identify limits and gaps within current strategy, justifying the construction of exercises which seek to address futures unaccounted for. In the time of the exercise itself, the audio-visual forms of knowledge and the theatrical use of props become integral to addressing and harnessing uncertainty. These forms of knowledge enable strategies of governing the future and governing it through the uncertainty that the future is inevitably associated with.

It is crucially important to note that this use of alternative forms of knowledge is not treated by the FRS with less value than the forms of archival-statistical analyses which I have inquired into in preceding chapters. Throughout this chapter, exercise construction has been frequently discussed in relation to the representation of real events. What Minerva exercises offer the FRS is the licence by which to assimilate newly recognised potential risks with what such risks would look like if they occurred in the not too distant future. This representation of reality is facilitated by the capacity to visualise such futures and even invoke the space of a potential incident. The sense of realism here allows uncertain events to become the justified object of strategic appraisal in the present. This aesthetic capturing of uncertainty, as has been seen, proves integral to the strategic practice of the service. In what has followed, response protocol can be assessed and developed for risks which are beyond current strategic frameworks and complicated in ways that have not heretofore been articulated.

8.6 Conclusion

In this chapter I have examined how the FRS deals with uncertainty around the future in bringing anticipatory forms of governance and intervention into effect. Rather than something which needs to be eliminated to avoid a kind of paralysis in governing risk, uncertainty is a productive force. Uncertainties surrounding the future are enveloped in what Foucault called a 'treatment' (2007, 20). As an inevitable fact of the future, uncertainty is recognised by the FRS, it is appropriated and deployed to strategically adapt to new emergent kinds of potential fire events.

For the purposes of this chapter, I have taken uncertainty to mean two things. In relation to previous chapters, uncertainty refers to potential fire incidents which cannot be known through conventional forms of probability logics or data which are archival statistical; data which have been quantitatively recorded from previous fire incidents. Inter-related with this first definition, uncertainty around potential futures is used to designate type of fires that are unaccounted for in pre-existing strategic frameworks and protocol which guides the FRS's response to fire.

Under the double-edged definition I have offered here, uncertainty is harnessed by the FRS to open up conceptual space for the innovation and cultivation of new forms of strategic decision making. The specific type of strategic decision making which uncertainty is used to appraise and develop is response protocol. Response protocol comes in three forms of risk assessment: generic, dynamic and analytical. Although established in anticipation of fire, these forms of protocol structure FRS response specifically in the real time unfolding of a fire incident. Especially in its dynamic and analytical incarnations, these forms of protocol seek to ensure that FRS response is adaptive and assimilates to the aleatory, unforeseeable and multiple, complex developments which may characterise a fire incident.

Uncertainties around future fires is captured and put to strategic use through exercises in the contemporary FRS. These exercises imagine and envision novel and heretofore unknown types of fire incidents to assess and develop new forms of response protocol. As I have defined uncertainty in part by

its' exceeding of conventional forms of calculation and knowledge, exercises imagine novel fire events by drawing on knowledge which is alternative to the conventional, archival-statistical analyses which I have explored in previous chapters.

The forms of knowledge which underpin exercises have been described by their aesthetic quality. The term aesthetic has been used to show how knowledge's deployed in exercises appeal to human senses of sight, hearing and memory rather than mathematical and algorithmic rationalities. To instigate the formulation of an exercise, for instance, both the experience and memory of FRS personnel is drawn upon to recognise fire risks surrounded by uncertainty. The creation of new exercises is justified, furthermore, by indicating how the new fire event recognised exposes gaps in the pre-existing strategic guidelines of the service. Events which possess uncertainty around their occurrence are thus identified by their absence from pre-existing strategic knowledge which seeks to guide the service in responding to a range of different kinds of fire. In turn, the recognition of uncertainty gives motivation for the development of new exercises.

The construction and orchestration of exercises shows how other forms of aesthetic knowledge inform governing through risk. The introduction of new audio-visual technology known as Particle Illusion to imagine fires in their unfolding epitomises this harbouring of new forms of knowledge. This technology is interwoven with the physical space of the ICC in performing the exercise. Along with the injects I discussed above, the interweaving of Particle Illusion with the materiality of the ICC forms the time-space of the exercise.

The legitimacy of exercises in shaping and developing FRS strategy derives from a narrative about the ability of exercises to realistically imagine future fires. This realism is achieved for a number of reasons which include both the interweaving of Particle Illusion's audio-visual projection of the future with the physical space of the ICC and how the temporality of the exercise is mutually structured and co-

ordinated between staff in the Control Room and staff partaking in the exercise itself. By its

interweaving with the sights and sounds of a future fire, the material components of the ICC take on a

new symbolic meaning by replicating the spatial and temporal considerations the FRS would have to

negotiate with in a real fire. For Davis (2003), this combining of the ICC and Particle Illusion temporally

displaces the exercise participant, making the participant perform the exercise in a way that feels, looks

and sounds 'real'. I have also discussed at length the use of injects and the mutual determining of when

these injects are deployed between staff in the Control Room and those taking part in the exercise.

These injects refer to the different developments or events which might occur in the incident and help

to temporally structure the exercise. Injects enhance the aleatory nature of the event depicted because

they are inserted in reaction to the decisions made by exercise participants. Sometimes their

deployment will complement a decision made by those taking part. In other cases, injects are deployed

to complicate the decision making of the exercise participant. Overall, the projection of fire in

accordance with the supposed reality of fire allows exercises to become a crucial technology in

advancing new strategies of intervention on potential fires which were previously unforeseeable.

Chapter 9. Conclusion

This thesis has examined the contemporary problematisation of fire governance. Drawing upon

Foucault's (1999) use of the term, problematisation initially refers to how assumed ways of thinking,

acting and governing become destabilised and renewed in different forms. I have argued overall that the

organisational, technological and operational transformations witnessed in the contemporary FRS have

facilitated, instigated, and have been enveloped within, a new way to conceive of fire as an event to be

governed.

The key problematising factors which brought about the contemporary FRS were the majorly

catastrophic events of the early twenty-first century and the government reaction to these events set

out in the *Fire and Rescue Services Act* (2004). In response to widespread government criticism of how

fire governance was undertaken and as part of broader changes occurring across security agents post

9/11, the *Fire and Rescue Services Act* sought to redefine the operation of the FRS in accordance with a

new understanding of fire as an event. Fire was to be understood as a risk.

I understand risk as a technology used to capture fire as an event which will occur in the future.

Following the conceptualisation of fire as a risk, I have argued that the contemporary FRS is an

organisation which governs through risk. Rather than being understood as an event only to be managed

as and when it occurs in an ever-unfolding present, the FRS now seeks to intervene upon and govern fire

by its potential. Governing through risk means that fire risk projections are used to shape the FRS as an

organisation both in terms of the FRS's arrangement between different sites of power and in terms of

the strategic action the FRS takes to manage fire. Furthermore, fire risk identification justifies the

interventions the FRS makes in the here and now and legitimates the existence of the FRS in general. Fire risk identification is thus the conditions of possibility for the FRS's existence in the contemporary.

This conclusion is split into three parts. Firstly, I outline my main arguments relating to what I have called the digital infrastructure of the service. This digital infrastructure generates risk analysis and thus conditions and facilitates the FRS capability to govern through risk. I show how my exploration of the digital infrastructure was conducted in accordance with three research objectives. Research into the digital infrastructure allowed for an inquiry into different ways in which fire is articulated as a risk. This objective has been met by underlining and discussing key analytic processes which the digital infrastructure both instigates and is enveloped within. I then move to describe how my research has achieved a second objective by assessing how risk projections enable strategic decision making about fire risk. I argue that the analysis the digital infrastructure performs opens the future up to new forms of anticipatory action in the present. I also discuss another incarnation of decision making here which has been crucial to describing the contemporary problematisation of the FRS. Considering the role of analysts' interface with technology, this form of decision making takes effect before the strategic enactment of the FRS and seeks to guide the analytic process in generating particular renditions of fire risk.

In the second section, I reflect on the contributions this thesis has made to literature and debates around contemporary securitisation and risk governance. This section demonstrates how I have met the third research objective of this thesis: to advance new theoretical understandings of how fire risk is known and governed. I suggest that my research has impact for many debates which are ongoing such as how populations are managed by anticipatory power, what organisational forms are evident in contemporary security and the role of uncertainty in contemporary risk governance. In the last section of this conclusion, I indicate future research trajectories that this thesis inspires.

9.1 Techniques and Technologies of Risk Governance

A primary focus point of this thesis has been that which renders fire risk an object and thus enables the FRS to govern through risk: the digital infrastructure of the service. This digital infrastructure comprises a host of different analytic technologies, analytic processes and data that have accumulated in the FRS. As I argued in chapter four, there are many reasons for understanding these technologies, processes and data specifically as a digital infrastructure. Viewed by the Chief Analyst as 'the pulse of the organisation', infrastructure properly attributes risk analysis technologies, processes and data with the vital importance they hold in the present day FRS. Infrastructure also asserts the interconnectivity of technologies, processes and data. Interconnectivity accounts for both the relations between different analytic technologies and the role of human analysts in generating accounts of fire risk.

My exploration of this infrastructure has been undertaken in accordance with different research objectives. Firstly, I set out to explain how fire is known as a risk through analysis. To understand how fire is known as a risk, I have inquired into the analytic processes which technologies instigate and are enrolled within. Drawing on the work of John Law, these processes can be described through the notion of 'fractional coherence' (2002, 2). Fractional coherence has been taken to mean how the singular function of a technology is dependent upon, and interwoven within, multiple processes ongoing in the digital infrastructure at the same time.

In this thesis, fractional coherence has been applied to explain how the fire risk projections produced by a singular analytic technology are reliant on processes across the digital infrastructure. In the chapters which centre on different analytic technologies, I initially investigated processes of data sourcing and

integration. I have identified various import and export functions which exist between different technologies. These functions work to transfer data from one component of the digital infrastructure to another. The data drawn upon by the FRS ranges from traditional demographic and geographical data to audio-visual data and data on the performance of the FRS itself. By this investigation, I have outlined the various types of data that rise to prominence in knowing fire as a risk and thus enact new anticipatory forms of governance in the FRS.

Once data have been integrated, the foundation for analysis has been laid. The processes of data sourcing and integration are followed by two subsequent processes: customisation and calculation. In relation to customisation, I discussed in chapter four how much of the software found within the digital infrastructure are not bespoke to the FRS but are available and applicable to domains which are not related to fire governance. The acquisition of software from private companies has led some to question exactly where the authority to govern is located in the contemporary (de Goede, 2012). Rather than following this line of inquiry, I emphasised in chapter four the dis-embedded character of digital technology in the contemporary and the ability of the FRS to appropriate universally available technology to practice new forms of analysis. With PB Views technology in chapter five, I argued that the ability to monitor performance is dependent on export functions to transfer data and the translation of data into new formats. Tied to processes of integration, customisation refers to the process by which generic technology is modified and made to serve the specific analytic purposes of the FRS. Customisation is thus crucially important in generating accounts of fire risk and thus facilitating governing through risk in the FRS.

Along with data sourcing, integration and technology customisation, I have also scrutinised calculation as a process by which fire is known as a risk. Through calculation, data on fire are comprehended and transformed into information on fire risk. Across the thesis, I have traced the different logics which

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underpin fire risk calculation. In chapter seven, for instance, I described how what is known as over-representation analysis is used to compare the ratio of different lifestyles in a post-code against the fire rate of the same post-code to make visible those lifestyle attributes that make people most vulnerable to fire risk. Through investigating these different logics, I have revealed how visions of fire risk are emergent through calculation.

The objective of assessing how fire becomes known as a risk is closely related to the second objective of research. This second objective was to examine how the projection of fire risk makes possible new forms of strategic action and decision making in governing fire. Under governing through risk, the FRS intervenes in the present in a way that is shaped around, directed towards and justified through visions of contingent futures. As I showed in chapter three, governing through risk is evident in the creation of a new strategic architecture in the FRS. This strategic architecture is comprised of three modes of action: protection, prevention and response.

Each of these strategies operates by a specific temporal relation in which the FRS can be deployed in the present but to govern the future. The intervention of the FRS through these different strategies is possible because of the analysis that technologies perform. By rendering fire risk emergent, analysis conditions and facilitates strategic interventions which secure the future. In chapter six, for example, calculation through FSEC technology equates to assessing the relationship between the spatial distribution of fire against the capacity of the FRS to mobilise its resources and arrive at the scene of a fire incident. Through FSEC, fire risk is made a problem of space and circulation. This spatial distribution of fire risk can be governed through an appraisal and improvement of the FRS's response standards for future fires. Governing through risk means that FRS interventions in the present are directed towards risks of the future. Along with rendering fire risk as an object of knowledge, the analyses that technologies perform open the strategic intervention of the FRS up for appraisal. Analysis acts to

reformulate strategy and enables anticipatory forms of governance. Through assessing how risk analysis informs the strategic deployment of the FRS, I have documented how new forms of governance and intervention are ushered in under governing through risk.

Although hugely significant for outlining how governing through risk inaugurates a whole new strategic architecture and modes of action for the FRS, treating decision making solely in this strategic incarnation has not been sufficient for the purposes of this thesis. Instead, another form of decision making has been investigated in this thesis as well. This other form of decision making takes place before the generation of accounts of fire risk and refers to the interface ongoing between analysts and the software contained in the digital infrastructure.

As Galloway (2012) was seen to remark in chapter four, interface can be traced in the effect it has. In this thesis, the effect of interface is apparent by how analysts intervene in the analytic process and the impact this interface has on subsequent understandings of fire risk. Thus in chapters on PB Views and MOSAIC technologies, I recorded how staff choose particular data to be exported for analysis over other data. Alternately, FSEC analysis requires analysts to manipulate data on the location of resources to perform hypothetical assessments which seek to improve the response standards of the FRS. In both instances, the intervention of analysts has an effect on how risk is conceptualised within the FRS. Through exploring interface, decision making has been taken not just to mean the enactment of strategy but how analysts guide the analytic process of the digital infrastructure.

Moments of interface, how they are narrated and the host of personnel interventions which guide the analytic process have been pivotal to understanding how risk is rendered as an object of governance throughout this thesis. Interface, and the effect interface has on prevailing conceptualisations of fire risk, is conditioned by wider political complications which emerge in seeking to govern the future. The amount of interface FSEC requires, for example, demonstrated how response is not merely appraised

through assessing the location of resources to the distribution of fire risk. Instead, personnel intervention in FSEC reveals how response is thought of in terms of cross-managing multiple population elements which need to be considered to bring about an acceptable spatial distribution of fire risk. Reducing response times across one area, as I noted, might not be practicable because of risk escalation elsewhere.

In other chapters, I have shown that analytic processes are complicated by tensions across the organisation which arise due to the transformations governing through risk has institutionalised. Nowhere is this better seen than with PB Views in chapter five. With the influence that accountability and auditing hold, PB Views enables the FRS to be a more reflexive organisation in the contemporary; an organisation which considers its own performance in order to govern fire risk. Decisions are made within the analytic process which reflects the personnel contestation existing around the purpose of PB Views and performance monitoring. These decisions are found, for instance, in what data are exported to PB Views and how performance information circulates through the service. In examining decision making within the analytic process itself, I argued that the introduction of new analytic technologies not only facilitate but can also obstruct and complicate the enactment of strategic decision making. Along with the matter of how strategies of intervention are formulated, interface reveals a plethora of political, ethical and organisational complications which rise to the foreground where the FRS governs through risk. These complications will now be discussed in relation to the contribution this thesis makes to pre-existing literature on anticipatory governance.

9.2 Contributing to Research on Anticipatory Governance

In exploring the contemporary problematisation of fire governance, I have contributed to ongoing debates around security, risk governance and emergency response. The contributions I have made meet the third objective of this research. As outlined in the introduction to this thesis, this third objective was

to advance new theoretical understandings of how fire is conceived as a risk and how anticipatory

modes of governance have been applied to manage fire risk.

The conceptualisation and understanding of fire as an event underwent transformation in the early

twenty-first century. One of the key precedents of the *Fire and Rescue Services Act* (2004) was to

establish fire as an event which cannot only be managed as and when it occurred but also by its

potential to occur in the future. In other words, fire was to be captured as a risk. In changing how fire

was conceptualised, the *Fire and Rescue Services Act* sought to update the FRS in lieu of a new risk

climate that was inaugurated with events such as 9/11. Through research into the FRS's digital

infrastructure, I have shown how fire has been reconceptualised as an event in the contemporary.

As noted across much literature (O'Malley, 2004b, Aradau and Van Munster, 2011), events such as 9/11

gave impetus to the development of new modes of governance which sought to manage new risks

which were now deemed possible. Pre-existing work has described the formulation of new forms of

strategic action and intervention in the early twenty-first century. For instance, literature has focused on

the emergence of pre-emption techniques and the mechanical logics by which pre-emption operates

(Massumi, 2007, Amoore and de Goede, 2008). Alternately, scholars have examined the role of

precaution (Ericson, 2003) and preparedness (Anderson, 2010b) in managing potential events of the

future. Although the arguments of this literature varies, they share a common foundation in claiming

that governance increasingly takes place in anticipation events and that intervention is enacted on the

basis of an event's potential. By the reconceptualisation of fire as risk, the FRS now also seeks to govern

and intervene in anticipation of fire.

Through my examination of governing through risk in the FRS, I have contributed to debates which have

been steered by the literature above. I have demonstrated how, in line with other types of

contingencies, fire has undergone conceptual transformation in the contemporary; being captured as

risk. Furthermore, I have claimed that this new conceptualisation of fire by its potential has enabled new modes of strategic action, such as response and prevention, to be brought into effect. As I argued in the last section, these strategies at play in the FRS are shaped around, and justified by, representations of the future which analytic technologies generate.

The contemporary problematisation of the FRS resonates with changes found across a broader security assemblage. In both knowing fire as a risk and intervening to govern this risk in the present, governing through risk is not only an assimilation to a new risk climate. Rather, governing through risk in the FRS is symptomatic of similar transformations found across a host of other security organisations. Where my thesis might be seen to depart initially from pre-existing literature is by the specific object to which anticipatory governance is applied in the FRS: fire. Other literature has shown how anticipatory governance developed in attendance to events whose supposed potential was catastrophic. As Aradau and Van Munster were seen to remark in chapter three (2012), these events have the capacity to rupture normative order in different ways. In contrast to these events, I have described fire as an everyday risk. Although fire causes major damage, it is an event which occurs on a daily basis. Rather than rupturing normative order, fire is a normal event of everyday life.[177]

With regards to fire as an everyday risk then, this thesis contributes to existing literature by showing how anticipatory modes of governance are an expansive set of practices which have found a new field of application in attending to fire risk. Techniques of anticipatory governance have been appropriated by the FRS and localised to the specific risk of fire. In turn, this move toward anticipation has engendered, and become enveloped within, a new problematisation of how fire is understood and consequently governed by the FRS.

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[177] Exceptions to the everyday character of fire can be found in those fire events which have caused a re-problematisation of fire fighting in the past, such as the Great Fire of London.

Alongside the literature outlined above, I have drawn upon Foucault's (2003, 2007, 2008) lectures on security to examine the appropriation of anticipatory modes of governance in the FRS. As I outlined in the introduction, security emerged for Foucault in response to problems about how to govern and manage societies based on liberal principles in the eighteenth and nineteenth centuries. Rather than governance being centralised as in sovereign forms of power or control being pre-determined as in disciplinary societies[178], security must adapt to the freedoms of liberal society. Security takes as it object of governance populations which make and remake normative order. Instead of only accounting for human life, population refers to human life, life's material surroundings and the events which occur therein. For Foucault, populations are made the object of governance through different forms of knowledge and regimes of analysis.

I have drawn upon Foucault's lectures initially to contribute to current debates around how anticipatory forms of governance are enacted on populations. Through investigating the forms of analysis that the FRS performs, I have examined how different elements of populations have become referent objects for governance in the FRS. In chapter six, I explored how populations are articulated as the 'space of security' (Foucault, 2007, 20) through FSEC risk mapping. For Foucault this space of security equates to the milieu to be governed. Seeking to improve the response standards of the FRS, I drew on Foucault's notion of the milieu to explain how anticipatory action can be executed through seeing fire as a problem of space and circulation. By the cross management of finite and geographically distributed resources, the FRS seeks to enhance response times for future fire incidents. Through describing how circulation is digitally envisioned in order to redeploy response strategy as an element of preparedness, I contributed to existing literature which argues that circulation becomes a crucial node in contemporary security (Amoore, 2006, Salter, 2013).

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[178] For an account of these forms of power and their difference from security, see Foucault (2007).

FSEC thus analyzes populations to envision fire risk in its spatial distribution and the entanglement of the FRS's response capabilities within broader circulations. In other analytic technologies I have scrutinised, population has also been inquired into to reveal how human life is governed by the FRS. Chapter seven discussed the use of MOSAIC software which establishes risk profiles. These profiles are deployed to target the FRS's preventative resources. In this chapter I sought to contribute to literature on how human life is constituted as a subject of governance in the contemporary (Foucault, 2008, Dillon and Lobo-Guerrero, 2008 Rose, 2007). I described how different forms of knowledge are sourced and drawn together in constituting the subject of anticipatory governance. In the FRS life is known, and made into the subject of governance, by its vulnerability to fire risk. The notion of vulnerability works to articulate life not in its current state but by its potential in the future. By rendering the vulnerable subject emergent, the FRS can intervene in the present to govern the future.

The subject is emergent through risk profiling in a way that reveals how governing through risk must negotiate with different legal and political complications. These complications are at the heart of contemporary security and speak of the need to secure but without undermining the freedom of the liberal subject (Lentzos and Rose, 2009). In the case of MOSAIC, this conflict between security and freedom is evident in questions around the level of depth or granularity to which human life can, and indeed should, be accessible to the FRS. The contribution I have made to existing literature is not only to show how human life is made a subject of anticipatory governance but how particular renditions of human life are produced in a way that is conditioned by wider problems which cut across the ability to govern the future.

Foucault's work was also drawn upon to interrogate the FRS in its form as a security apparatus or arrangement. Initially equating to a set of practices and institutional sites, I used the term arrangement to explore how the FRS is organised and co-ordinated. I have argued that the matter of arrangement is

crucial to explaining how the FRS both understands, and strategically attends to, fire. As I claimed in chapter two, fire governance has been arranged in a way that might be described as governmental from its inception. The FRS's arrangement is governmental because the FRS has been managed between disparate sites which often traverse the divide between public and private realms. It was important to examine the service's history through a genealogy to emphasise the dynamism of this arrangement. Fire governance went from the responsibility of private insurance companies in the seventeenth and eighteenth centuries to the domain of local and municipal authorities in the nineteenth and, temporarily, became a nationalised entity at the time of the blitz.

With each shift and reformation, how fire was conceptualised as an event and how fire should be strategically intervened upon was appraised under new limits and possibilities. Under the profiteering motives of insurance companies, fire was conceptualised as a hazard and fire's potential was gauged in relation to the built environment. When brigades were brought under the remit of local authorities, fire was governed to secure human life. The dynamism attributed to the service's arrangement was paralleled then by a continual re-problematisation of fire and fire brigade operations.

In chapter three, I examined the arrangement of the FRS in considering the contemporary problematisation of fire governance. As the over-arching rationale of the service, governing through risk does not just enact anticipatory intervention and reconceptualise fire as a risk. Instead, governing through risk also impacts on the arrangement of the FRS between different institutional sites. As I argued, the contemporary decentralisation of the FRS is shaped around a specific understanding of fire risk. Fire risk is understood as regionally variant and determined by the population characteristics of specific areas. Local control of the FRS is thus required to govern the locally prevailing risk of fire. Due to its coordination between local sites and a central one, practices of auditing and accountability have become crucial in the contemporary FRS. These practices serve different purposes. On one hand,

auditing ensures that local FRSs are coordinated towards over-arching strategic aims. On the other, accountability justifies the existence of the FRS by demonstrating the continuing risk of fire. With the interweaving of accountability and auditing into the contemporary arrangement of the FRS, I have argued that risk is not only that which the service attends to and seeks to mitigate. Instead, risk identification shapes the organisational arrangement of the FRS. Through accountability, furthermore, risk identification provides the channel through which the interventions the FRS makes in the present are justified.

My discussion of the notion of arrangement does not just centre on how the FRS is organisationally coordinated and put into practice. Instead, arrangement was also used to examine how elements of the digital infrastructure of the service are configured and function. In chapter five, the arrangement of PB Views performance monitoring technology was discussed through Foucault's term; apparatus (1980). I argued that the term apparatus must be synthesised with another relational construct: assemblages (Deleuze and Guattari, 2003, Latour, 2005). Finding points of synthesis between apparatuses and assemblages was crucial to showing how PB Views is situated within and reliant upon both the multiplicity of the digital infrastructure and the organisational context of the FRS more generally.

Instilling the key practices of auditing and accountability in the FRS, PB Views allows the FRS to take a reflexive turn. This reflexive turn is evident in how PB Views makes the performance of the FRS itself a crucial factor in risk management. The notion of apparatus demonstrates how the function of PB Views to monitor performance relies on forging connections with other technologies. I drew upon the notion of assemblage to show how the function of performance monitoring is complicated by the reliance of PB Views on the broader organisational context of the FRS. The notion of assemblage meant that PB Views could be described in its role as a mediator. As mediator, PB Views forges relations between those monitoring and those being monitored. At the same time, however, I used the notion of mediator to

examine the effect PB Views has on the relations it forges. This mediator role that I attributed to PB Views was evident in the contesting narratives which develop around the purpose of performance monitoring. These contesting narratives are used by staff to justify the selection of data for analysis which distorts the representation of performance in PB Views. The use of this data complicates the ability of PB Views to fulfil its task of performance monitoring. By showing how the insertion of PB Views serves to complicate, at the same time as facilitate, decision making, I have contributed to debates by outlining how the two relational constructs of apparatus and assemblage might be synthesised in discussing the life of analytic technologies in security organisations.

In chapter eight, I contributed to literature which discusses how risk governance grapples and contests with the fact that futures are ultimately uncertain (Beck, 1992, Daase and Kessler, 2007). I returned to Foucault to argue that some of the analytic technologies found in the FRS are involved in what might be called a 'treatment of uncertainty' (2007, 11). In chapter eight the notion of treatment was taken to mean that anticipatory forms of governance must be open to the uncertainties that surround the future at the same time as operating on the basis of conventional forms of risk calculation.

In line with other literature (de Goede, 2008), uncertainty is harnessed by the FRS to legitimate the insertion of new forms of knowledge to imagine fire events whose complexity surpass data collected on past events. These new forms of knowledge underpin the process of creating new exercises in the FRS. Constructed through cinematic audio-visual technology which is integrated with the physical site of the Incident Command Centre[179], these exercises envision novel fire scenarios to develop protocols for events which have yet to occur. As I argued in chapter eight, it is uncertainty around the future which gives impetus to the construction of exercises. In turn, uncertainty is a source of creativity for imagining, and governing, contingent futures.

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[179] As described in the chapter itself the Incident Command Centre is the physical site in which exercises are performed.

9.3 Future Directions in Researching Governing through Risk in the FRS

Governing through risk is novel and still emergent as the *modus operandi* or rationale of the FRS. As the contemporary problematisation of the FRS, what I have termed governing through risk pervades, and is nascent in, policy and legislation that sought to respond to criticisms of the FRS in the wake of a supposedly new risk climate ushered in by the events of the early twenty-first century. It is also important to reiterate that the anticipatory turn witnessed in the FRS is similar to various transformations afoot across a wider assemblage of security and emergency response agents that the FRS coordinates with such as the Police and Ambulance services.

The thesis has examined, in part, how data and analysis inform, shape and justify decision making on strategic intervention. I have examined how strategy is enacted under particular temporal conditions. Specifically, I have argued that strategic intervention is enacted in the present but directed towards governing the future. The first future research direction would be to inquire into how the FRS strategically brings itself into effect under different temporal conditions from those discussed in this thesis. Rather than examining how strategy is developed solely in anticipation of fire, future research could inquire into how these anticipatory strategies are deployed in the real-time unfolding of fire events.

This research would focus on two inter-related domains of FRS activity. Firstly, I would concentrate in more depth on the construction of response protocols like the Generic Risk Assessments and Standard Operating Procedures (SOPs) I commented on in chapter eight. I would concentrate on how these protocols, although developed in anticipation of fire, structure response within the actual unfolding of a

fire in the present. Secondly, I would assess the role of control rooms[180] in the FRS. These control rooms

are a hub for data on incidents as incidents unfold and work to transfer data to operative personnel as

they fight fire. Control rooms are thus crucial to coordinating and managing the response capabilities of

the FRS.

A number of research questions could be pursued by this future research trajectory. The research would

assess the effectiveness of protocols developed in anticipation of fire events in terms of intervening

when a fire actually takes place. Through interviews, I would gauge how operative staff structure their

action through protocol. Interviews would also investigate instances in which the complexity of fire has

caused staff to deviate from pre-formulated protocol. Through ethnography of the FRS control room,

the research would explore the importance of data in managing fires as they unfold. Ethnography would

be used to examine the deployment of response strategy which has been renegotiated under governing

through risk. Ethnography would be used to probe, for instance, how data allow the service to engineer

speedy response times to incidents and how data enable coordination between operative personnel at

the scene of a fire.

I stated at the start of this section that the shift to anticipatory modes of governance is not only evident

in the FRS. Rather, this anticipatory turn is evident across a number of security and emergency response

organisations such as the Police and Ambulance services. Another future research trajectory which could

be developed on the basis of this thesis would be to examine how the turn to anticipatory modes of

governance engenders new relations between the FRS and other agents of emergency response. The

coordination which occurs between the FRS and other emergency responders is confined predominantly

to the governance of, and response to, large scale disruptive events such as terrorist attacks and natural

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[180] These control cooms should not be confused with the Control Rooms discussed in chapter eight. Control Rooms in chapter eight refers to a space from which the audio-visual imagining of new fire scenarios are projected into exercise sites in the FRS. The Control Rooms I am referring to here in the conclusion are spaces in which the FRS's response is coordinated at the time of an actual fire.

events such as flooding. For the FRS, the coordinative measures which exist between the FRS and other

emergency responders have been articulated in FRS strategy as matters of National Resilience (2008).

Under the nomenclature of National Resilience, this research would examine how collaborative and

coordinative measures are designed by the FRS in negotiation with other emergency responders in

seeking to govern potential large scale incidents. I would interrogate initially the generation of

coordinative protocols which designate specific duties to agents of emergency response. On one hand,

these duties include how practical elements of response are segmented according to different areas of

expertise found across different emergency responders[181]. On the other hand, these duties relate to the

acquisition and subsequent distribution of data relating to an event as it unfolds.

The research could also examine other matters of preparation for such events. Firstly, I would

investigate how analysis is undertaken to know the event before it unfolds. I would assess specifically

how the conceptualisation of an event through risk analysis calls for and justifies the development of

coordinative measures between emergency responders. In addition, I would probe into how successful

coordination is reliant on ways of configuring the space in which response to events takes place. I would

focus on how events can be managed because of how the power relations which exist between

emergency responders are configured and planned through spatial knowledge.

With regard to the research aims of this thesis, the two future research trajectories I have outlined

would add new dimensions of discussion to contemporary risk governance practices. Firstly, future

research would explore further ways in which data assume vital importance in emergency response. My

research into control rooms would explain how data collected in anticipation of an incident is called

upon and actioned when an event actually occurs. Furthermore, research into National Resilience would

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[181] From my initial research into National Resilience, such expertises would include the recovery of the built
environment that an event has damaged, the mass decontamination of people affected by the event and rescue
operations.

extend lines of inquiry pursued in this thesis into the broader context of contemporary risk governance

and emergency response. One of the key aims of this thesis has been to understand how visions of the

future order strategies of governance in the present. In future research, strategies of governance would

be explored not just in their organisation around representations of the future but as products of the

negotiation undertaken by multiple emergency response organisations.

Appendix 1. Transcribed excerpt of semi-structured interviews.

14/10/2011 Corporate Planning and Performance Team.

Interviewer: Basically... I want to go over everything we talked about really in terms of the different analytic packages which are being used...in CPP... FSEC, PB Views, Phoenix...your risk matrix as well... thought that was really interesting and MOSAIC... and Active. So...yeah, open forum though... I want to sort of... ask questions and hopefully get as many responses as possible... really... there's not a right and wrong answer for all this. So, start off with FSEC then... I was interested by ... the idea that it's only used when someone asks you to use it... when there thinking about something else... about changing the structure of the Fire and Rescue Service in some way... and I was wondering is that the only time FSEC is used at the moment? You know when someone requests for it to be used[

Interviewee one: mmm]

Interviewer: [and, how often as well are structural changes in the service made without using FSEC?

Interviewee one: Right can I answered that one first and you... (directed at interviewee two)

... some answer? It isn't... it traditionally has not just been used to answer

a question... what we would do is we would normally review the risk profiles

of the county... right? it would require us to update the incident data and then

take a review of the risk areas... but to be fair that profile changes very little... year on

year... but having said that there has been an issue with getting data since IRS

is that correct?

Interviewee two: Yeah, 2009.

Interviewee one: So the problem really now, Nat, is getting current... information in really[

Interviewer: why can't you get that information?]

Interviewee two: The CLG and IRS has an export function in an FSEC format... however...it's got a few

abnormalities with it [

Interviewer: Right]

Interviewer two: but there are some brigades who...know... what the problems are... and are able to fix

them themselves[

Interviewer: Yeah]

Interviewee two: and there manually manipulating it to work... whereas... we don't know enough about

the formats to fix it...you know[

Interviewer: so you basically can't export the IRS data]

Interviewee two: [in an FSEC format]

Interviewer: [through CLG... you'd have to do it through your own sort of[

Interviewee two: No, cause we don't have our own... there's your sort of various... sort of algorithms[

Interviewee one: Now, one of the other matters on that is that there was a bit of reduced emphasis on

FSEC for a couple of years[

Interviewer: Yeah]

Interviewee one: because we were meant to be migrating to a new system... called RMT.. as part of the

RCC... the regional control centre[

Interviewer: Yeah]

Interviewee one: and, if we were going to be doing anything with FSEC then the idea is we would be

doing it on the new model... now that's not the case... effectively... we are what we've

got[

Interviewer: Yeah]

Interviewee one: did we get an upgrade to FSEC for something as well? (directed at interviewee two)

Interviewee two:... what we got... we got FSEC... transferred onto a quicker machine[

Interviewer: Right]

Interviewee two... better hardware...yeah... so the FSEC models were able to run a little bit quicker

there's also... I think there's a major incident module... they've just brought out as well

so they are doing a few little updates... obviously Census info in there is ten years old...

and they were unable to confirm whether or not they would be able to update that data

Interviewer: How important is it to have completely up-to-date data to do the FSEC runs?

Interviewee one: I would say it's very important... yes[

Interviewer: So]

Interviewee one: because the...the thing is... like I say... what you see is from... revising the risk profile is

not... there's very little change... but if we were to update...say... Census data... when

Its available... I think we would start to see some change because... without a doubt

there has been a difference in our incidents... and there's a difference in the

demographics in the area[

Interviewer: mmm]

Interviewee one: in this last ten years... without a doubt... now.... that's, that's important... one of the

other concerns from my point of view is where we will ultimately be with FSEC support

.... there was an email very very recently wasn't there? (directed at interviewee two) in

terms of the funding for FSEC support ultimately won't be through CLG in the future...

it's being given over to an independent organisation and that looks like it's over to the

Guy who was working for CLG to go and work for them... so it just brings to bear

Questions of what sort of support there will be for FSEC in the future... and with that in

Mind... you know... these guys know that... my thoughts are always thinking... right

We use FSEC... it provides us with a level of risk analysis but to be honest we get as

Much... probably more out of TSM Phoenix [

Interviewer: Right...yeah]

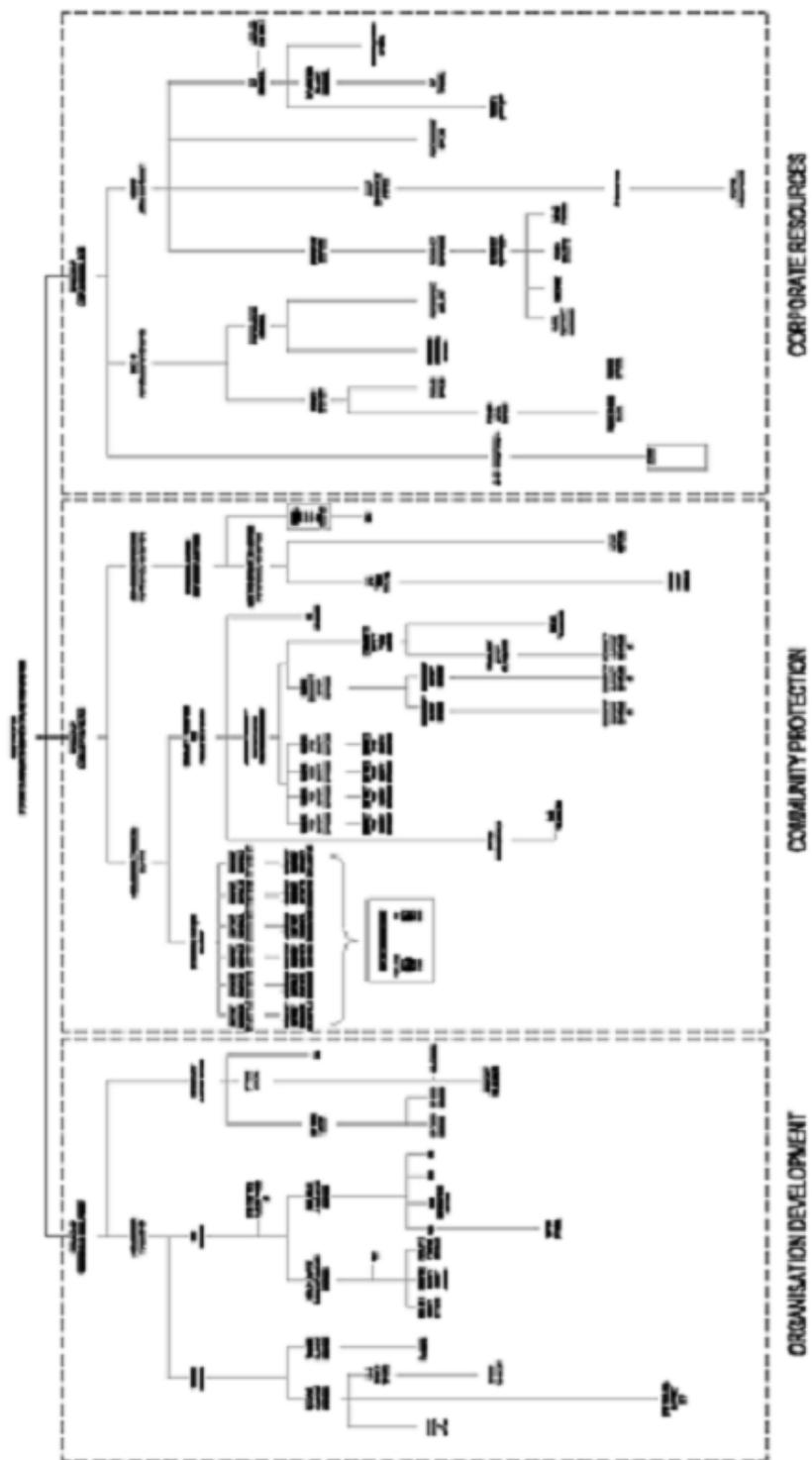Interviewee one: and the other thing is... Nat... That shouldn't we not be thinking about what else we

Want to do with other products... and we're actually exploring that now... we had a

Meeting with another organisation... just... that was last week

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Chapter two. Figure one. Wenceslaus Hollar's map of the damage caused by the Great Fire of London 1666. Title of the map is *An exact Surveigh of the streets, lanes and churches within the ruines of the City of London.* Reproduced courtesy of the British Library Board.
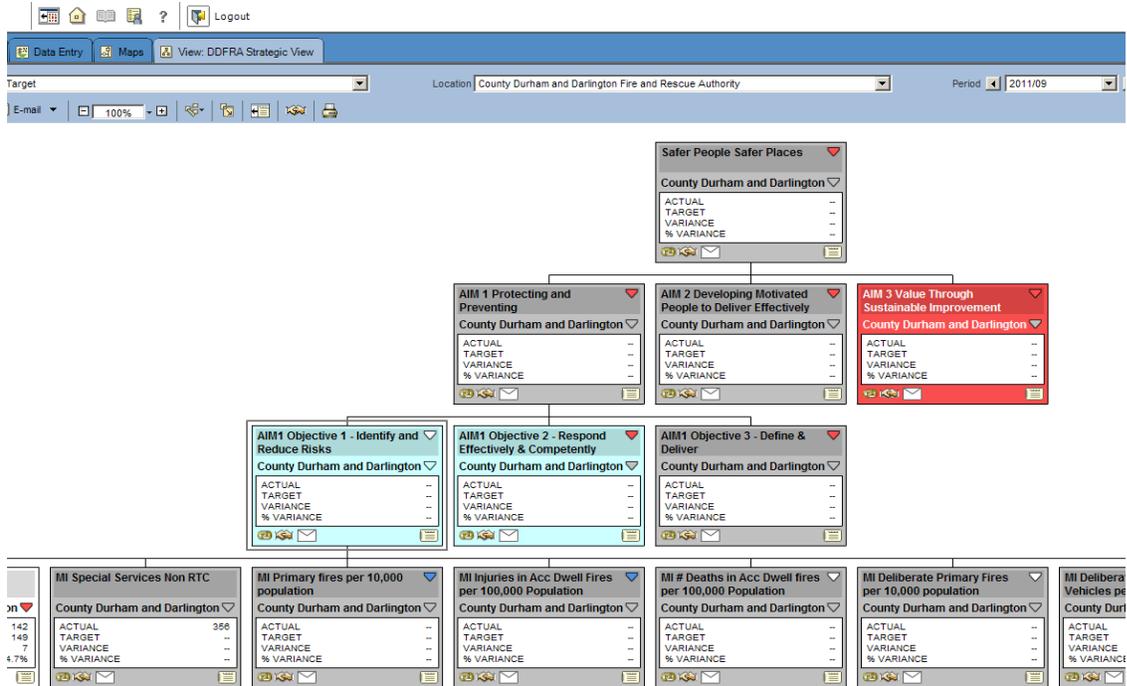
Chapter five. Figure two: The organisational structure of the FRS.

Figure three: PB Views pyramid structure.
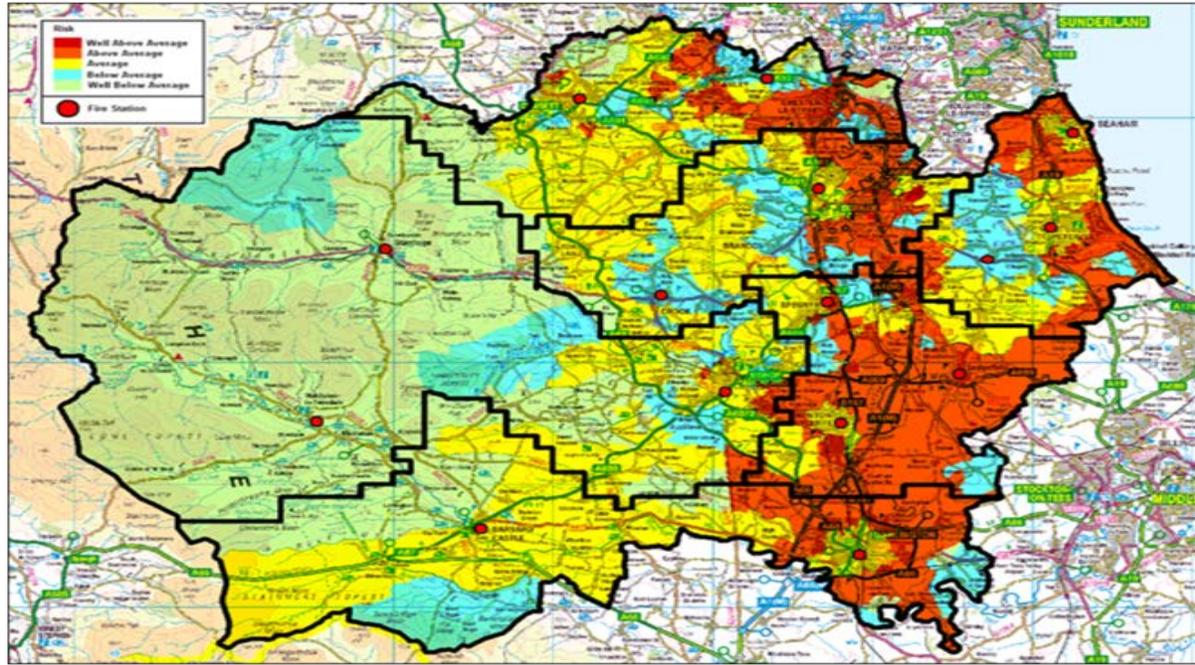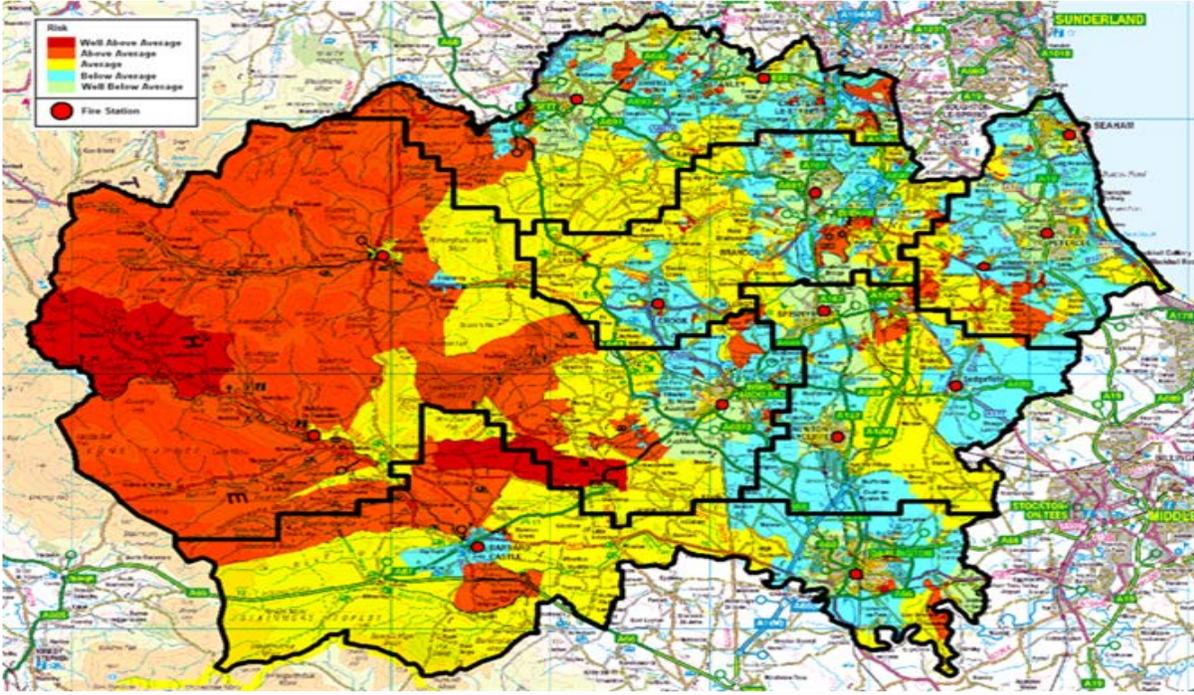
Chapter six. Figure four: FSEC Base-Case

Figure five: An example of FSEC after the hypothetical reallocation of resources. The co-causal understanding of fire that FSEC carries is found here in the changed colours of different areas within the map.
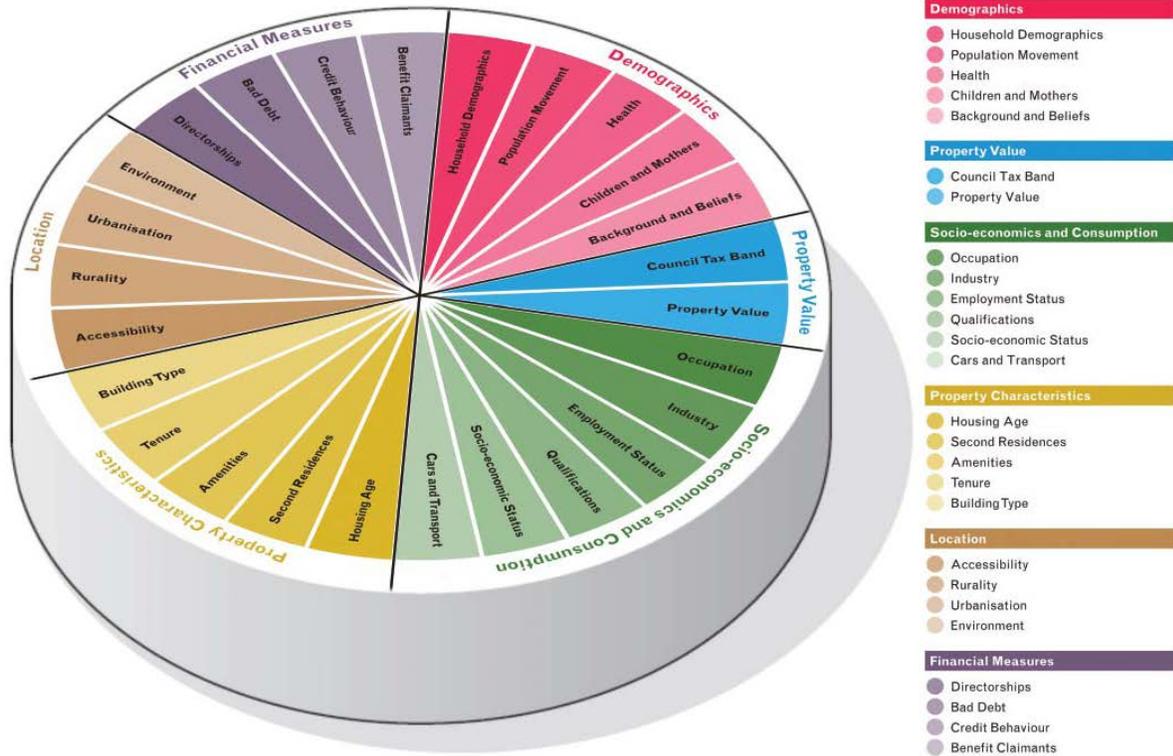
. Figure six. MOSAIC data collection pie chart.

Figure seven. MOSAIC lifestyle representation versus IRS location of fire incidents. Different colouring shows the distribution of lifestyles. Red spots indicate fire history.
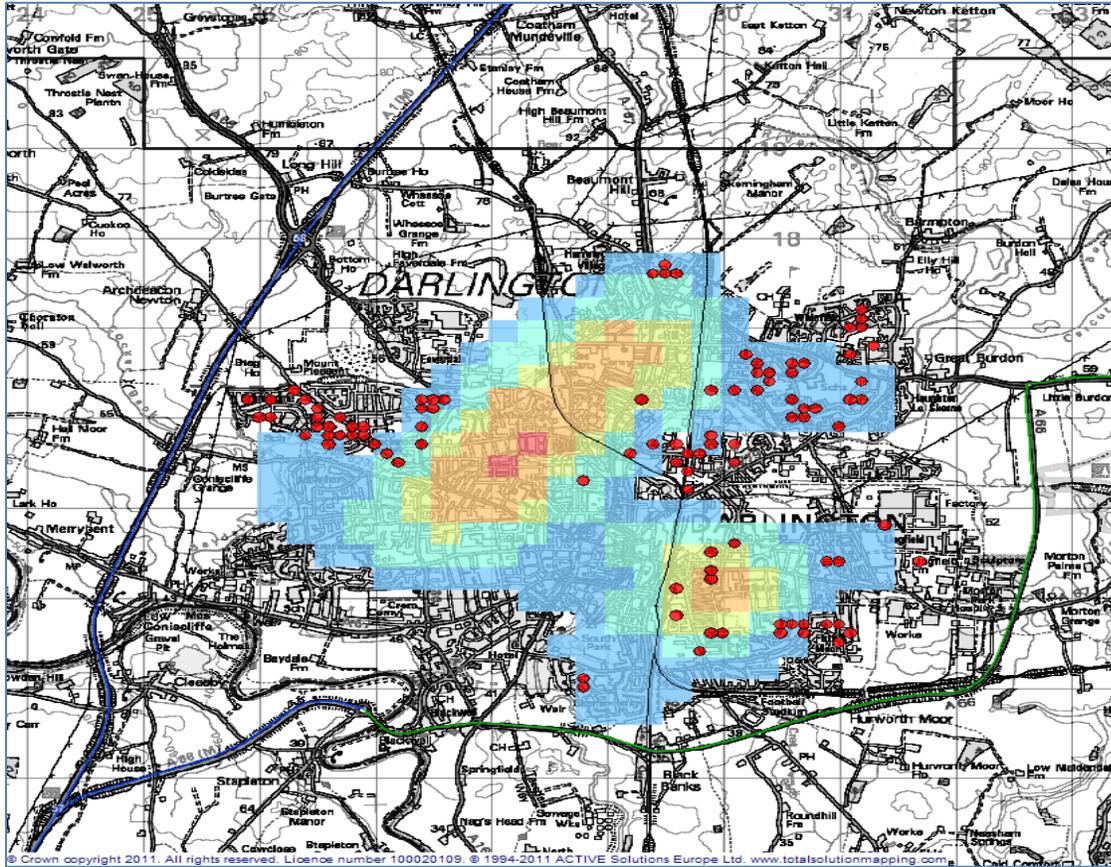
Figure eight. MOSAIC over-representation analysis.

Type	All County	Dwelling Fires	Variance
K48 Middle aged couples and families in right-to-buy homes	3.11%	6.78%	3.67%
K50 Older families in low value housing in traditional industrial areas	10.40%	13.56%	3.16%
U99 Unclassified	0.00%	2.82%	2.82%
O69 Vulnerable young parents needing substantial state support	3.74%	6.21%	2.48%
B08 Mixed communities with many single people in the centres of small towns	0.48%	2.26%	1.78%
D15 Well off commuters living in spacious houses in semi rural settings	0.87%	2.26%	1.39%
I44 Low income families occupying poor quality older terraces	4.34%	5.65%	1.31%
K51 Often indebted families living in low rise estates	0.64%	1.69%	1.05%
G32 Students and other transient singles in multi-let houses	0.68%	1.69%	1.02%
O67 Older tenants on low rise social housing estates where jobs are scarce	5.83%	6.78%	0.95%
L55 Capable older people leasing / owning flats in purpose built blocks	0.37%	1.13%	0.76%
M58 Less mobile older people requiring a degree of care	0.46%	1.13%	0.67%
N60 Tenants in social housing flats on estates at risk of serious social problems	0.52%	1.13%	0.61%

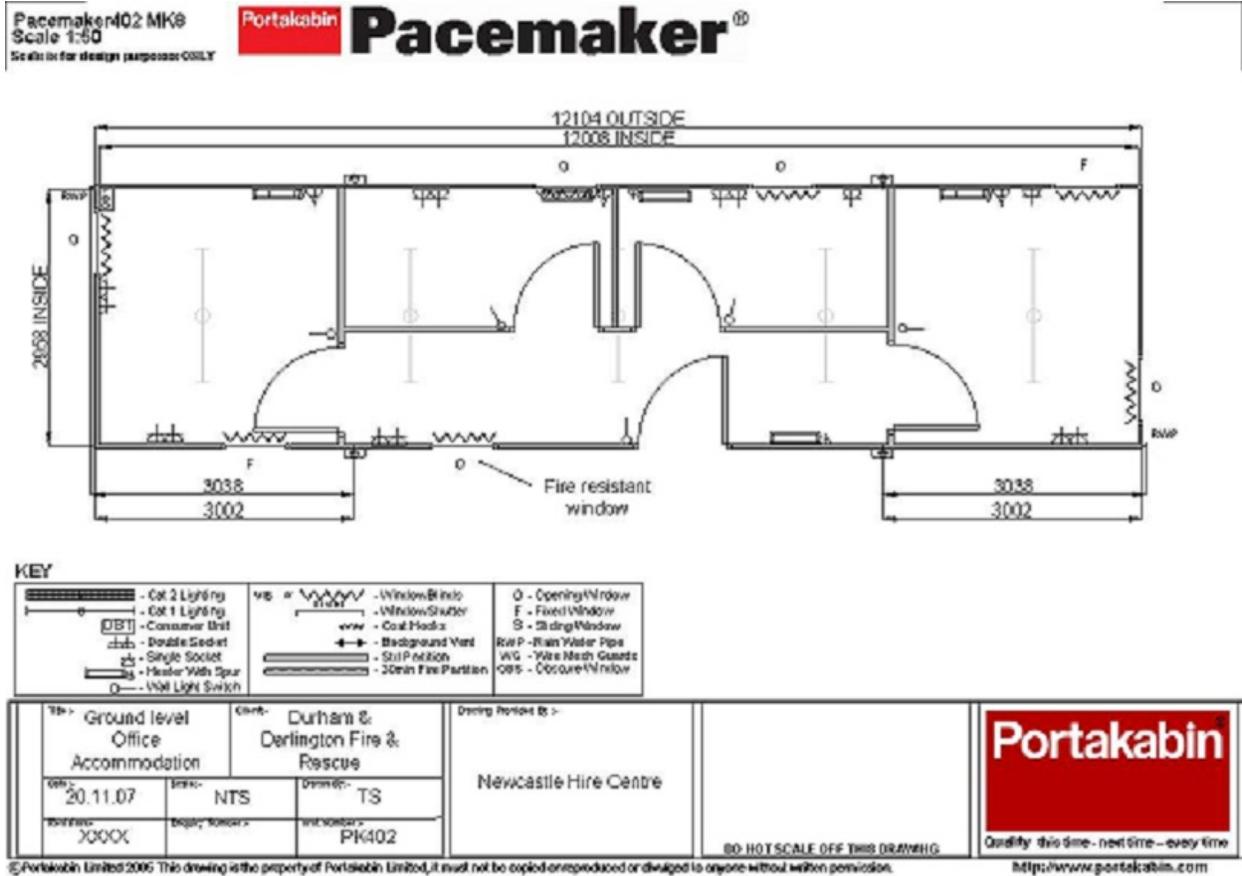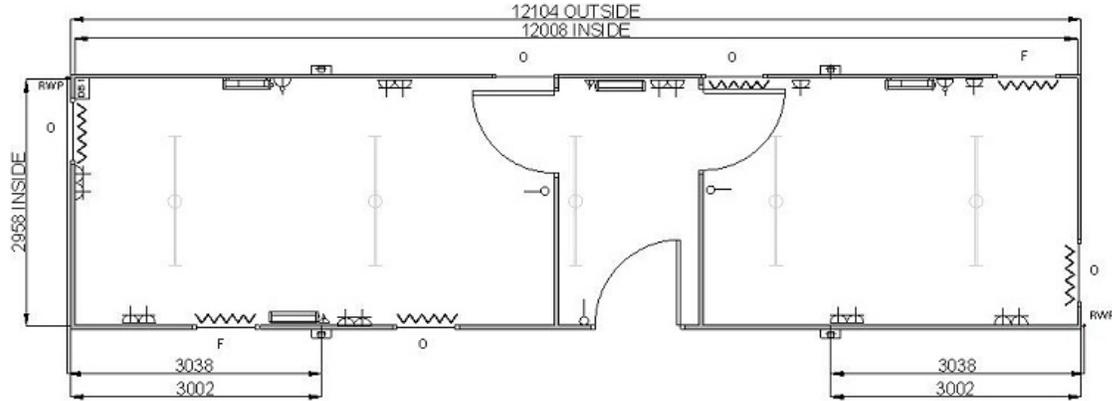Chapter eight. Figure nine: Design of the Syndicate Rooms in the Incident Command Centre.

Figure ten: Design of the Control Room in the Incident Command Centre.

Figures eleven and twelve: Particle Illusion simulation of new and unknown fire events.

Bibliography

- Adam B, Beck U and Van Loon J (2000) <u>The Risk Society and Beyond: Critical Issues for Social Theory</u>, Sage, London
- Adey P and Anderson B (2012) Governing Events and Life: Emergency in UK Civil Contingencies, <u>Political Geography</u>, Volume 31, pp24-33
- Adey P and Anderson B (2011a) Affect and Security: Exercising Emergency in UK Civil Contingencies, <u>Environment and Planning D: Society and Space</u>, Volume 29, pp1092-1109
- Adey P and Anderson B (2011b) Event and Anticipation: UK Civil Contingencies and the Space-Times of Decision, <u>Environment and Planning A</u>, Volume 43, pp2878-2899
- Agamben G (1998) <u>Homo Sacer: Sovereign Power and Bare Life</u>, Stanford University Press, Stanford
- Agamben G (2009) <u>What is an Apparatus? and Other Essays</u>, Stanford University Press, Stanford
- Amoore L (2006) Biometric Borders: Governing Mobilities in the War on Terror, <u>Political Geography</u>, Issue 25, pp336-351
- Amoore L (2007) Vigilant Visualities: the Watchful Politics of the War on Terror, <u>Security Dialogue</u>, Volume 38, pp215-232
- Amoore L (2009a) Algorithmic War: Everyday Geographies of the War on Terror, <u>Antipode</u>, Volume 41, Issue 1, pp49-69
- Amoore L (2009b)Lines of Sight: On the Visualisation of Unknown Futures, <u>Citizenship Studies</u>, Volume 13, Number 1, pp17-30
- Amoore L (2011) Data Derivatives On the Emergence of a Security Risk Calculus for our Times, <u>Theory Culture Society</u>, Volume 28, 24-43
- Amoore L and de Goede M (eds) (2008) <u>Risk and the War on Terror</u>, Routledge, Oxon
- Amoore L and de Goede (2008) Transactions after 9/11: the Banal Face of the Preemptive Strike, <u>Transactions of the British Institute of Geographers</u>, Volume 33, Issue 2, pp 173-185
- Amoore L and Hall A (2010) Border Theatre: on the Arts of Security and Resistance, <u>Cultural Geographies</u>, Volume 17, Issue 3, pp 299-319
- Anderson B (2010a) Preemption, Precaution, Preparedness: Anticipatory Action and Future Geographies, <u>Progress in Human Geography</u>, Volume 34, pp777-798
- Anderson B (2010b) Security and the Future: Anticipating the Event of Terror, <u>Geoforum</u>, Volume 41, Issue 2, pp227-235
- Aradau C (2010) Security That Matters: Critical Infrastructure and Objects of Protection, <u>Security Dialogue</u>, Volume 41, Issue 5, pp 491-514
- Aradau C and Van Munster R (2007) Governing Terrorism through Risk: Taking Precautions (Un)knowing the future, <u>European Journal of International Relations</u>, Volume 13, Issue 1, pp89-115
- Aradau C and Van Munster R (2008) Insuring Terrorism, Assuring Subjects, Ensuring Normality: The Politics of Risk after 9/11, <u>Alternatives</u>, Volume 33, Number 2, pp 191-210
- Aradau C and Van Munster R (2011) <u>Politics of Catastrophe: Genealogies of the Unknown</u>, London, Routledge

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- Aradau C and Van Munster R (2012) The Time/Space of Preparedness: Anticipating the 'Next Terrorist Attack', <u>Space and Culture</u>, Volume 15, Issue 2 pp98-109
- Bachelard G (1964) <u>The Psychoanalyses of Fire</u>, Routledge and Kegan Paul, London
- Beck, U (1992) <u>Risk Society: Towards a New Modernity</u>, Sage, London
- Becket F (2010) <u>Fire fighters and the Blitz</u>, Merlin, Pontypool
- Bell D (1999) <u>The Coming of the Post-Industrial Society: a Venture in Social Forecasting</u>, Basic Books, New York
- Bell GW (1923) <u>The Great Fire of London, 1666,</u> London, Bodley Head
- Bevir H (1938) <u>The Fire Brigades Act 1938 Explained</u>, National Fire Brigades Association
- Bigo D and Tsoukala A (eds) (2008) <u>Terror, Insecurity and Liberty: Illiberal Practices in Liberal Regimes after 9/11</u>, Oxon, Routledge
- Blackstone GV (1957) <u>A History of the British Fire Service</u>, Routledge and Kegan Paul, London
- Bowker GW and Star S (1999) <u>Sorting Things Out: Classification and its Consequences</u>, MIT Press, London
- Braidwood J (1866) <u>Fire Prevention and Fire Extinction</u>, Bell and Daldy, London
- Brinklow T (2004) Domains, <u>Ontologies, Models and the Knowledge Creation Cycle,</u> Occasional/Working Paper Series, Brighton Business School
- Burrows R and Ellison N (2010) Sorting Places Out? Towards a Social Politics of Neighbourhood Informationalization, <u>Information, Communication and Society,</u> Issue 7, Volume 3, pp 321-336
- Burrows R and Gane N (2006) Geodemographics, Software and Class, <u>Sociology</u>, Volume 40, Issue 5, pp 793-812
- Canguilhem G (1988) <u>Ideology and Rationality in the History of the Life Sciences</u>, MIT press, Cambridge
- Canguilhem G (1994) <u>A Vital Rationalist; Selected Writings from Georges Canguilhem</u>, Zone Books, New York
- Carlson JE (2005)The Economics of Fire Protection: From the Great Fire of London to the Rural/Metro, <u>Journal of Economic Affairs</u>, Volume 25, Issue 3, pp39-44
- Castells M (1996) <u>The Rise of the Network Society,</u> Blackwell, Cambridge
- Chief Fire Officers Association (2010), <u>Spending Review: Position Statement</u>
- Clough P (2000) <u>Autoaffection: Unconscious Thought in the Age of Technology,</u> University of Minnesota Press, London
- Cockerell HAL and Green E (1994) <u>The British Insurance Business: 1547- 1970</u>, Sheffield Academic Press, Sheffield
- Collier SJ (2008) <u>Enacting Catastrophe; Preparedness, insurance, Budgetary Rationalization</u>, Economy and Society, Volume 37, Issue 2, pp224-250
- Collier SJ (2009) Topologies of Power; Foucault's Analysis of Political Government beyond Governmentality, <u>Theory, Culture, Society,</u> Volume 26, Number 6, pp78-108

- Collier SJ and Lakoff A (2008a) The Vulnerability of Vital Problems: How Critical Infrastructure Became a Security Problem in Dunn M (eds) <u>The Changing Logistics of Risk and Security</u>, Routledge, London
- Collier SJ and Lakoff A (2008b) Distributed Preparedness: the Spatial Logic of Security in the United States, <u>Environment and Planning D: Society and Space</u>, Volume 26, pp7-28
- Collier SJ, Lakoff A and Rabinow P (2004) Bio-Security: Towards an Anthropology of the Contemporary, <u>Anthropology Today</u>, Volume 20, Issue 5, pp7-28
- Communities and Local Government (2004) <u>Fire and Rescue Services Act 2004 Factsheet</u>
- Communities and Local Government (2004) <u>Fire and Rescue Services Act</u>
- Communities and Local Government (2007) <u>Fire and Rescue Authorities: The Crucial Role of the New Local Performance Frameworks</u>
- Communities and Local Government (2008), <u>Fire and Rescue Service National Framework</u> 2008-11
- Communities and Local Government (2008), <u>Fire Service Emergency Cover Toolkit: Executive Summary Fire Research Report 01/2008</u>
- Communities and Local Government (2008) <u>Fire Service Manual: Incident Command, Volume 2, 3rd Edition</u>
- Communities and Local Government (2011), <u>Fire and Rescue Service National Framework Consultation 2011-2014</u>
- Communities and Local Government (2011) <u>Fire Statistics, Great Britain, 2010-11</u>
- Communities and Local Government (2011) <u>Generic Risk Assessment Series, GRA3.7: Fighting Fires in Refuse</u>
- Communities and Local Government (2011), <u>The Economic Cost of Fire: Estimates for 2006, Fire Research Report 2/2011</u>
- Corporation of London (1668) <u>An Act for Preventing and Suppressing of Fires within the City of London and the Liberties Thereof</u>, London
- Corporation of London (1774) <u>The Fire Prevention (Metropolis) Act 1774</u>
- County Durham and Darlington Fire and Rescue Authority (2011), <u>Integrated Risk Management Plan Consultation 2012-2013</u>
- County Durham and Darlington Fire and Rescue Authority (2011), <u>Community Protection Plan 2010/11-2012/13</u>
- Daase C and Kessler O (2007) Known and Unknowns in the War on Terror': Uncertainty and the Political Construction of Danger, <u>Security Dialogue</u>, Volume 38, Issue 4, pp411-434
- Daston L (1988)<u>Classical Probability in the Age of the Enlightenment</u>, Princeton University Press, Princeton
- Davis T (2003) Stages of Emergency: the Casualties Union, <u>Modern Drama</u>, Number 2, pp151-181
- de Goede (2008) Beyond Risk: Pre-mediation and the Post 9/11 Imagination, <u>Security Dialogue</u>, Volume 39, Issue 2-3, pp 155-76
- de Goede M (2012) <u>Speculative Security: The Politics of Pursuing Terrorist Monies</u>, University of Minnesota Press, London

- de Goede M and Randalls S (2009) Precaution, Preemption: Arts and Technologies of the actionable Future, <u>Environment and Planning D: Society and Space</u>, Volume 27, Issue 5, pp859-878
- De Landa M (2002) <u>Intensive Science and Virtual Philosophy</u>, Continuum, London
- De Landa M (2006) <u>A New Philosophy of Society: Assemblage Theory and Social Complexity</u>, Continuum, London
- De Larrinaga M and Doucet M (2008) Sovereign Power and the Bio-politics of Human Security, <u>Security Dialogue</u>, Volume 39, Issue 5, pp517-537
- Deleuze G (1988) <u>Foucault</u>, University of Minnesota Press, Minneapolis
- Deleuze G and Guattari F (2003) <u>A Thousand Plateaus: Capitalism and Schizophrenia,</u> Continuum, London
- Der Derian J (2001) <u>Virtuous War; Mapping the Military-Industrial-Media-Entertainment Network</u>, Westview Press, Perseus
- Dillon M (2007) Governing Terror: The State of Emergency of the Biopolitics of Emergence, <u>International Political Sociology</u>, p 7-29, Volume 1, Issue 1
- Dillon M (2007) Governing through Contingency: the Security of Bio-Political Governance, <u>Political Geography</u>, Volume 26, Number 1, pp41-47
- Dillon M (2008) <u>Foucault on Politics, Security and War</u>, Palgrave/Macmillan, Basingstoke

- Dillon M and Lobo-Guerrero L (2008) Biopolitics of Security in the Twenty First Century: An Introduction, <u>Review of International Studies</u>, Volume 34, pp265-292
- Dillon M and Reid J (2001)Global Liberal Governance: Bio-Politics, Security and War, <u>Millennium: Journal of International Studies</u>, Volume 30, Issue 1, pp41-66
- Dodge M and Kitchin R (2005) Codes of Life: Identification Codes and the Machine Readable World, <u>Environment and Planning D: Society and Space</u>, Volume 23, pp851-881
- Dolan FE (2001) Ashes and the Archive: The London Fire of 1666, Partisanship and Proof, <u>Journal of Medieval and Early Modern Studies</u>, Volume 31, Issue 2, pp379-408
- Donzelot J (1988) The Promotion of the Social, <u>Economy and Society</u>, Volume 17, Issue 3, p395-427
- Du Gay P (2003) The Tyranny of the Epochal: Change, Epochalism and Organizational Reform, <u>Organization</u>, Volume 10, Number 4, pp663-684
- Elden S (2002) <u>Mapping the Present: Heidegger, Foucault and the Project of Spatial History</u>, Continuum, London
- Ericson R (2006) Ten Uncertainties of Risk-Management Approaches to security, <u>Canadian Journal of Criminology and Criminal Justice</u>, Volume 48, Number 3, pp 345- 356
- Ericson R and Doyle A (2004) Catastrophe Risk, Insurance and Terrorism, <u>Economy and Society</u>, Volume 33, Issue 2, pp135-173
- Ericson R, Doyle A and Barry D (2003) <u>Insurance as Governance</u>, University of Toronto Press, Toronto
- Ericson R and Haggerty K (2003) The Surveillant Assemblage, <u>The British Journal of Sociology</u>, Volume 51, Issue 4, pp605-622

- Ericson R and Haggerty K (2006) <u>The New Politics of Surveillance and Visibility</u>, Toronto University Press, Toronto
- Evans R (1987) The Early History of Fire Insurance, <u>Journal of Legal History,</u> Volume 8, Issue 1, pp88-91
- Ewald F (1991) <u>Insurance and Risks</u> in Burchell C, Gordon C and Miller P (Eds) <u>The Foucault Effect; Studies in Governmentality</u> (pp197-210), London, Harvester
- Ewald F The Return of Descartes' Malicious Demon in Baker T and Simon J (2002) <u>Embracing Risk: The Changing Culture of Insurance and Responsibility</u>, University of Chicago Press, Chicago
- Ewen S (2006) Preparing the British Fire Service for War: Local Government, Nationalisation and Evolutionary Reform 1935-41 <u>Contemporary British History</u>, Volume 20, Issue 2, pp 209-231
- Ewen S (2010) <u>Fighting Fires: Creating the British fire Service 1800-1978</u>, Palgrave-Macmillan, Basingstoke
- Experian Limited (2009) <u>Improved Outcomes through Applied customer Insight; Experian's MOSAIC Public Sector Citizen Classification for the United Kingdom</u>
- Feeley M and Simon J (1992) The New Penology: notes on the Emerging Strategy of Corrections and its Implications, <u>Criminology</u>, Volume 30, Issue 4, pp449-474
- Foucault M (1980) The Confession of the Flesh in Gordon C (eds) (1980) <u>Power/Knowledge: selected interviews and other writings</u>, pp194-220, Pearson Education, Brighton
- Foucault M, Nietzsche, Genealogy and History in Rabinow P (eds) (1991) <u>The Foucault Reader</u>, Penguin, Harmondsworth
- Foucault M, Polemics, Problematizations and Politics in Rabinow P (eds) (2000) <u>Michel Foucault</u>: <u>Ethics, Subjectivity and Truth, Penguin</u>, London
- Foucault M (2003) <u>Society Must Be Defended</u>, Penguin, London
- Foucault M (2007) <u>Security, Territory and Population</u>, Palgrave/Macmillan, Basingstoke

- Foucault M (2008) <u>The Birth of Bio-Politics,</u> Palgrave-Macmillan, Basingstoke
- Galloway A (2012) <u>The Interface Effect</u>, Polity Press, London
- Gandy O (1993) <u>The Panoptic Sort: A Political Economy of Personal Information</u>, Westview Press, Boulder
- Goudsblom J (1992) <u>Fire and Civilization</u>, Penguin Press, Harmondsworth
- Graham S (2005)Software Sorted Geographies, Progress<u> in Human Geography</u>, Volume 29, Issue 5, pp562-580
- Hacking I (1975) <u>The Emergence of Probability: A Philosophical Study of Early Ideas about Probability, Induction and Statistical Inference</u>, Cambridge University Press, Cambridge
- Hacking I (1990) <u>The Taming of Chance</u>, Cambridge University Press, Cambridge
- Hacking I (2006) Making People Up, <u>London Review of Books</u>, Volume 28, Number 16, pp23-26
- Harman G (2009) <u>The Prince of Networks: Bruno Latour and Metaphysics,</u> Re:press, Melbourne
- Harrison T (1976) <u>Living through the Blitz</u>, Penguin, Harmondsworth
- Hollis B (1985) <u>The Forgotten Front Line: Station 40, New Cross</u>, Enthusiasts Publications, Buckinghamshire

- Home Office (1938) <u>Air Raid Precautions Memorandum Number 7: Personnel Requirements for Air Raid General and Fire Precautions and the Police Service</u>
- Home Office (1939) A<u>ir Raid Precautions Memorandum Number 9: Notes on Training and Exercises</u>
- House of Commons (1667) <u>A True and Faithful account of the several informations exhibited to the honourable committee appointed by the Parliament to inquire into the late dreadful burning of the city of London</u>
- Information Commissioner's Office (1998) <u>Data Protection Act</u>, London
- Insurance Offices on the Backside of the Royal Exchange (1681) <u>An enquiry, whether it be the interest of the city to insure houses from fire and whether the insured may expect any advantage thereby, more than from the Insurance-Office already settled</u>, London
- James PS (1954) Nicholas Barbon, Founder of Modern Fire Insurance, <u>The Review of Insurance Studies, Volume </u>1, Number 2, pp44-47
- Kittler F (1986) <u>Gramophone, Film, Typewriter</u>, Brinkman and Bose, Berlin
- Lamarck JB (1960) <u>Philosophie Zoologique</u>, Englemann, Weldon and Wesley, Weinheim

- Lash S (2002)<u>Critique of Information</u>, Sage, London
- Latour B (2005) <u>Reassembling the Social: An Introduction to Actor Network Theory</u>, University of Oxford Press, Oxford
- Leete J (2008) <u>Under Fire: Britain's Fire Service at War</u>, Sutton, Stroud
- Lentzos F and Rose N (2009) Governing Insecurity: Contingency Planning, Protection Resilience, <u>Economy and Society</u>, Issue 38, Number 2, pp230-254
- Lobo-Guerrero L (2011) <u>Insuring Security: Bio-politics, Security and Risk</u>, Routledge, London
- Lyon D (eds) (2003) <u>Surveillance as Social Sorting: Privacy, Risk and Digital Discrimination</u>, Routledge, London
- Massumi B (2002) <u>Parables of the Virtual: Movement, Affect, Sensation,</u> Duke University Press, Durham
- Massumi B (2007) Potential Politics and the Primacy of Preemption, <u>Theory and Event,</u> Volume 10, Issue 2
- Mbeme A (2003) Necropolitics, <u>Public Culture</u>, Volume 15, Issue 1, pp11-40
- McCutcheon (2007) <u>Air Raid Precautions</u>, Tempus, Stroud
- Metropolitan Board of Works (1865) <u>Metropolitan Fire Brigade Act</u>
- Milne G (1986) <u>The Great Fire of London</u>, Historical Publications, London
- National Commission on Terrorist Attacks upon the United States (2004) <u>The 9/11 Commission Report: Final Report of the National Commission on Terrorist Attacks upon the United States</u>
- O'Grady N (2013) Adopting the Position of Error: Space and Speculation in the Exploratory Significance of Milieu Formations, <u>Environment and Planning D: Society and Space</u>, Volume 31, Issue 2, pp 245-258
- O'Malley P (2000)Uncertain Subjects: Risks, Liberalism and contracts, <u>Economy and Society</u>, Volume 29, Issue 4, pp 260-284

- O'Malley P (2004a) <u>Risk, Uncertainty and Government</u>, Glasshouse, London
- O'Malley P (2004b) The Uncertain Promise of Risk, <u>The Australian and New Zealand Journal of Criminology</u>, Volume 37, Number 3, pp323-343
- O'Malley P (ed) (2006) <u>Governing Risks</u>, Ashgate, Aldershot
- O'Malley (2010) <u>Crime and Risk</u>, Sage, London
- Office of National Statistics (2012) <u>Changes to Output Areas and Super Output Areas in England and Wales 2001-2011</u>
- Office of the Deputy Prime Minister (2004) <u>The Fire and Rescue Service Act</u>
- Office of the Deputy Prime Minister (2006) <u>Fires in the Home: Findings from the 2004/05 Survey of English Housing</u>
- Opinion Research Services (2011) <u>Proposed Merger Between West and East Sussex Fire and Rescue Services: Independent Report of the Consultations</u>
- Owen DE (1982) <u>The Government of Victorian London: 1855-1889: the Metropolitan Board of Works, the Vestries and the City Corporation</u>, University of Harvard Press, Cambridge
- Philips J (2006) Agencement/Assemblage, <u>Theory, Culture, Society</u>, pp108-109, Volume 23, Number 2-3
- Power M (2003) Evaluating the Audit Explosion, <u>Law and Policy</u>, Volume 25, Issue 3, pp187-201
- Power M (2009) The Risk Management of Nothing, <u>Accounting, Organizations and Society,</u> Volume 34, Issue 6/7, pp849-855
- Ricoeur P (2006) <u>On Translation</u>, Routledge, London
- Roberts JHR (1943) <u>The National Fire Service: A Guide to the Statutory Orders and Regulations and the Code of Discipline</u>, Pitman and Sons, London
- Rose N (1990) <u>Governing the Soul: the Shaping of the Private Self</u>, Routledge, London
- Rose N (1999) Inventiveness in Politics, <u>Economy and Society</u>, Volume 28, Issue 3, pp467-493
- Rose N (2006) <u>Governing Advanced Liberal Democracies</u> in Gupta A and Sharma A (eds)(2006) <u>The Anthropology of the State: A Reader</u>, Blackwell, Oxford
- Rose N (2007)<u>The Politics of Life Itself; Bio-Medicine, Power and Subjectivity in the Twenty-First Century,</u> Princeton University Press, New Jersey
- Salter M (2008) Risk and Imagination in the War on Terror in Amoore L and De Goede M (2008) <u>Risk and the War on Terror</u>, Routledge, Oxon
- Salter M (2013) To Make Move and Let Stop: Mobility and the Assemblage of Circulation, <u>Mobilities</u>, Volume 8, Issue 1, pp 7-19
- Savage M and Burrows R (2007) The Coming Crisis of Empirical Sociology, <u>Sociology</u>, Volume 41, Issue 5 pp 885-899
- Schoch-Spana M (2004) Bioterrorism: Us Public Health and A Secular Apocalypse, <u>Anthropology Today</u>, Volume 1, Issue 20, pp1-6
- Sun Fire Office (1712) <u>Proposals Set forth by the Company of the Sun=Fire=Office For Insuring Houses, Marcable Goods, Merchandize, Furniture, and Wares From Loss and Damage by Fire, in any part of Great Britain</u>, London

- Sun Fire Office (1757) <u>Proposals from the Sun-Fire-Office, near the Royal Exchange, For Insuring Houses, and Other Buildings, Goods, Wares and Merchandize, from Loss and Damage by Fire,</u> London
- The Institution of Structural Engineers (1938) <u>Report of the Committee on Air Raid Precautions</u>
- The Times, 25/06/1861, <u>The Great Fire</u>, London
- Thrift N and French S (2002) The Automatic Production of Space, <u>Transactions of the Institute of British Geographers,</u> Volume 27, Issue 3, pp309-335
- Wall C (1986)<u>The Literary and Cultural Spaces of Restoration London,</u> Cambridge University Press, Cambridge
- Wallington N (1981) <u>Firemen at War: The Work of London's Fire fighters at War</u>, David and Charles, Newton Abbot
- Webster F (2002) <u>Theories of the Information Society</u>, Routledge, London
- Winthrop-Young G (2011) <u>Kittler and the Media</u>, Polity Press, Cambridge

Website Bibliography:

- http://www.actuate.com/download/Corporate-FAQ-end-Q2FY13.pdf#zoom=100 (last accessed 06/09/2013)
- https://www.civica.co.uk/key-facts (last accessed 08/09/2013)
- http://www.tns-bmrb.co.uk/about-us/history (last accessed 09/09/2013)
- http://www.wondertouch.com/index2.html?14 (last accessed 06/09/2013)
- http://yougov.co.uk/about (last accessed 09/09/2013)