The Biopolitics of Resilience

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Abstract

This thesis analyses resilience as a value which constitutes a telos for contemporary liberal security initiatives. In recent years, resilience strategies have been increasingly employed within liberal states a means of responding to the radical contingency of threat. Rather than seeking to protect a referent through prophylactic measures, resilience strategies aim to optimize the capacity of complex systems to rapidly adapt to, and evolve *through*, crises.

The advent of resilience strategies is premised upon a radical re-evaluation of the referents of security as complex systems. The discovery of the natural resilience of systems integral to liberal life has enabled strategies of emergency governance seeking to harness these processes, and optimize their conditions of 'freedom'. By naturalising resilience these accounts serve to render its value self-evident. This thesis problematises these accounts by offering a biopolitical genealogy directed at elucidating the historical conditions of possibility for resilience to emerge as a security value.

This thesis takes as its empirical referent the case of the historical evolution of a British machinery of governance for responding to emergencies. Analysis makes explicit distinct, and indeed rival, rationalities of governance which can be read from its evolving design. Resilience is demonstrated to be an expression of an emergent neoliberal order of governance. Applying a biopolitical security analytic inspired by Foucault, this genealogy traces the historical consolidation of this order in respect of transformations in the regime of power/knowledge enacted by apparatus of security.

A biopolitical genealogy demonstrates that resilience is the correlate of a broader restructuring of the rationalities and practices comprising liberal security governance. By drawing attention to the complex historical processes and significant governmental efforts required to make resilience possible this thesis aims to open up a space through which the value of resilience may be more critically interrogated.

Contents

Acknowledgements

For Mom and Dad

Introduction:

The Value of Resilience

For that which one calls value presupposes a knowledge which is not itself questioned.   Values thus contain the risk of being extremely vague.

(Nancy, 2005: 439)

The problem of critique is that of the value of values, of the evaluation from which their value arises, thus the problem of their creation.

(Deleuze, 1983: 1)

Panic appeared frequently in the headlines of British dailies printed for the morning of July 8, 2005:

The Daily Mirror:
"07/07: Terror In London: WE'RE GOING TO DIE! WE'RE GOING TO DIE! ; Cries pierce choking air as survivors flee twisted wreckage of Tube trains**"** (Moyes, 2005)

The Times:
 "Panic, shoving, fear of fire and bonding below ground" (Hamilton, 2005)

The Guardian:
 "Attack on London: Aldgate: Stunned silence, darkness, panic, then calm: 8.51am" (Henning, 2005)

The corresponding articles drew heavily on eyewitness accounts to reconstruct, for a curious readership, the scenes which unfolded when three explosions erupted near simultaneously in the London Underground followed by a fourth blast, less than an hour later, on a city bus during the busy morning rush hour the day previous. The stories told were mixed. Ray

Wright, a relief train driver, described a "sea of blackened faces in a state of total panic" (BBC News, 2005b). "There was immediately smoke everywhere and it was hot and everybody panicked. People thought they were just going to suffocate" told another witness (Muir and Cowan, 2005). Others, however, focused on the acts of cooperation, solidarity, and 'heroism': virtues which many articles were quick to suggest demonstrated a resurgence of the 'blitz-spirit' in the very place where many Londoners had gathered to seek cover from aerial bombardment half a century earlier. "There was no panic, especially when people realised they were OK. Everyone then bonded together and helped each other. Then we got out and saw the second carriage. There was blood and stuff everywhere; it wasn't pretty" (Hamilton, 2005).

In the months that followed, these journalistic accounts would be supplemented by an academic discourse purporting to scientifically explain the forms of collective human behaviour displayed following the blasts. Utilizing a mix of qualitative and quantitative methods to analyze newspapers articles, archived personal accounts, and eye-witness interviews these studies sought to apply and refine explanatory frameworks for the psychosocial behaviours which emerged during this, and other, emergencies (Drury et al., 2009b, Cocking et al., 2009). The studies suggested that participants were frightened, no doubt, but focused, cooperative. Selfish forms of behaviour were marginal in comparison to incidences of mutual help and assistance. Other studies suggested that the psychological effects of the events were short-lived with few members of the population experiencing any lasting stress or trauma (Page et al., 2008, Rubin et al., 2005). Even financial markets rebounded quickly (BBC News, 2005a, Washington Post, 2005, cf. London Chamber of Commerce and Industry, 2005). While some suggested that a historical experience with

terrorism, and perhaps even the memory of the war-time Blitz, had contributed to a particular immunity to panic amongst Londoners (Sheppard et al., 2006, Wessely, 2005a, Wessely, 2005d), the studies broadly agreed that a natural 'resiliency' within emergency events was a more general phenomenon with incidences of panic being rare if, in fact, they ever manifest at all.

At the turn of the twenty-first century, resilience has become a 'buzz-word' within emergency planning and response. Since 2001, British Civil Contingencies—a network of organizations responsible for emergency planning and response in the UK—has been organized around the objective of optimizing British resilience to emergencies. This strategy is premised on optimizing the 'natural' resilience demonstrated by a range of systems underpinning or constitutive of British life to 'bounce-back' from crisis. These systems include human populations, infrastructure networks, ecosystems and numerous other complex systems which share the common capacity to adaptively self-organize in the midst of crises. To this end, the complexity sciences [1] have proved influential: providing a matrix for understanding the common behaviour of these systems and advancing a blueprint for how they might be optimized. Models developed in the natural sciences such as particle systems (Bouvier and Guilloteau, 1996, Bouvier et al., 1997) and fluid and gas dynamics (Hughes, 2000, 2002, 2003, Takimoto and Nagatani, 2003) are purported to be as applicable to modelling crowd behaviour in an emergency as they are for understanding the self-organizational flocking patterns of migrating birds (Reynolds, 1987, Cabinet Office, 2009b) or air-bag deployment (Bouvier et al., 1997).

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[1] For an introduction to the complexity sciences see Gleick (1988), Urry (2003) or Waldrop (1992)

The advent of resilience strategies within UK civil contingencies has coincided with a remarkable shift in the understanding of the referents of emergency governance. On the one hand, a radical re-evaluation of collective human behaviour in emergencies has all but eradicated the problematic of panic which preoccupied British emergency planning since at least its formal institutional inception in the final years of the First World War. On the other hand, the concerns of emergency governance have widened from the behaviour of human populations in the midst of an emergency, to the 'life-like' processes of adaptive emergence displayed by a range of complex systems which collectively underpin 'UK resilience'. The advent of resilience strategies within UK Civil Contingencies has been explained as the result of these scientifically validated re-evaluations of the referents of security. This explanation also serves as a legitimation. The resilience strategies of UK Civil Contingencies have failed to generate any substantial public criticism thus far comparable its predecessor—UK Civil Defence.[2] Of course the reasons for this are numerous: the humanism of Civil Contingencies in contrast to the genocidal wager of Civil Defence; the focus on community participation rather than state secrecy; the celebration of human dynamism, creativity and freedom, rather than the brutal oppression of political dissidents and suppression of public panic. Resilience strategies are celebrated as demonstrative of the growing humanism of emergency governance. Within these narratives, resilience enjoins the positivism of social science with the emancipatory project of liberalism: Knowledge of the nature of 'the social' permits less governance, less control and more 'freedom'.

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[2] Concerns raised with respect to UK Civil Contingencies have primarily focused on legislative changes to emergency powers contained within part two of the the Civil Contingencies Act (2004) and their potential to be exercised arbitrarily or excessively within the context of the 'war on terror' (see, for example, Coaffee, 2003, 2009, 2010, Coaffee and Rogers, 2008, Coaffee et al., 2009, Kearona, 2007, O'Brien and Read, 2005). Far less crticism has been directed towards the actual logics and strategies of of UK Civil Contingencies operations themselves.

While one could take this positivism for granted, what if we were to remain stubbornly sceptical with regard to this 'advance' in the understanding of collective human behaviour. How then might we account for the transformations in emergency governance characteristic of contemporary UK Civil Contingencies? How then might we account for the shift in the referents of emergency governance and the re-evaluation of social behaviour upon which these strategies are premised? How might we explain the emergence of resilience? This thesis offers an alternative explanation. Resilience was not lying in wait for the march of science to provide the conditions for its recognition. Nor was it concealed by the distortions of ideology which lifted with the culmination of the Cold War. There is nothing natural about resilience.

This study is organized as a biopolitical genealogy. The aim of this genealogy is to show that resilience is the product of much more complex historical processes than the accounts listed above take into account. Resilience, I argue, is the *product*, rather the cause, of a broader restructuring of rationalities and practices comprising liberal governance associated with a transition to neoliberalism (Barry et al., 1996a, Foucault, 2008). Drawing on a biopolitical analytic inspired by Foucault, these transformations in liberal governance are investigated in relation to mutations in the regime of power/knowledge enacted by apparatus of security. In doing so, this study contributes to recent research in the biopolitics of security investigating how different ways of understanding and presenting 'life' lead to different problematisations of security (Dillon and Lobo-Guerrero, 2008, 2009, Dillon and Reid, 2009, Reid, 2006). Resilience is a mode of valuation for life understood in terms of its complexity and assessed on the basis of its capacity for adaptive emergence. This genealogy traces the historical conditions underpinning resilience's emergence as a value organizing security operations within UK emergency planning and response. It is interested in elucidating the

historical processes of appreciation responsible for the growing value of this value within liberal security discourses.

By drawing attention to the history of the value of resilience this genealogy aims to open a space within which the value of this value may be more rigorously questioned. In recent years, a small but growing body of critical research has begun to emerge which has established links between resilience, developments in the 'liberal way of war' and neoliberalism (Cooper and Walker, 2011, Dillon and Reid, 2009, Duffield, 2011, Lundborg and Vaughan-Williams, 2011, O'Malley, 2010a). These critiques are both important and timely. Yet, their critical purchase may be diminished if neoliberalism continues to be understood primarily in terms of the rolling-back of the state (see Barry et al., 1996b). Resilience has been criticized as an abnegation of the duty of the state to provide security and an abandonment of citizens who are now left to fend for themselves (Duffield, 2011, Reid, forthcoming). The danger of such criticisms is that they inadvertently perpetuate the myth that resilience is a natural phenomenon which appears in conditions free of governance. In fact, resilience has required, and continues to depend upon, significant governmental support in order to produce the conditions in which citizens are permitted to 'freely' operate. As will be detailed in the following chapters, resilience programmes have required the investment of significant amounts of time, money, planning and training. In Britain, optimizing 'UK resilience' is the responsibility of rather disparate network of public, private and volunteer organizations indicative of "a 'de-governmentalization' of the state, but not 'de-governmentalization' *per se*" (Barry et al., 1996b: 11). Moreover, the state plays a critical role in the coordination of these efforts. Bruce Mann, *Head of the Civil Contingencies Secretariat,* puts it simply: "Our approach is to enable and to encourage" (Mann, 2007). Here, the British

state assumes responsibility for enhancing the conditions of operability for a vast network of agencies and individuals to collectively self-organize in the midst of crisis. Resilience may therefore be affiliated with neoliberalism, not in respect of a retreat of the state, but insofar as it demonstrates a reorientation of the objectives of liberal governance in relation to referents of security understood as complex, self-organizing systems. Resilience, in short, 're-inscribes' the state (Campbell, 1998).

The remainder of this introduction will be used to elaborate upon the genealogical method employed within this study. First, I make the case that resilience should be understood as an emergent security value. A state of the art of resilience literature is provided in outlining this argument. This is followed by a discussion of the genealogical method employed by this study, understood as a critical historical inquiry into the emergence of values. Finally, this study is situated within contemporary scholarship in the biopolitics of security by detailing the biopolitical analytic employed by this study and showing how it advances this genealogy. The introduction concludes with a brief outline of the following chapters.

The Value(s) of Security

Resilience is now a ubiquitous term across a diverse array of discourses with some purchase in risk management. The notion of resilience can be found in discourses pertaining to environmental sustainability (Beatley, 2009, Gunderson and Holling, 2002, Kay et al., 1999), natural disasters (Paton and Johnston, 2006, Trim, 2005), animal and public health (Schoch-Spana, 2008), anti-terrorism (Coaffee, 2003, Lentzos and Rose, 2009, Page et al.,

2008), economics (Briguglio, 2008, Rose, 2003, 2007a), finance (McDonough, 2003), business contingency planning (Sheffi, 2005, Brookbanks et al., 2002, Waters, 2007), critical infrastructure protection (Gorman, 2005, Ottens et al., 2006, Radvanovsky and McDougall, 2010, Scalingi, 2007), engineering (Hollnagel et al., 2006, 2011), network science (Barabási, 2007, Cohen et al., 2006, Najjar and Gaudiot, 1990), economic development (United Nations Development Programme, 2004, United Nations Environment Programme, 2004), urban planning (2008, Coaffee, 2009, Coaffee et al., 2009), child psychology (Bancroft, 2004, Coleman and Hagell, 2007, Croft, 2006), and psychological trauma (Joseph and Linley, 2008, Paton et al., 2003, O'Malley, 2010a, Rynearson, 2006, Wessely, 2005c)—to name just a selection. Yet, the ubiquity of the notion of resilience within these literatures conceals its more specific formulations within different applications and specialist literatures.

At its most general level resilience is understood as the capacity to absorb, withstand and 'bounce-back' quickly and efficiently from a perturbation. It is considered to be both a natural property and a quality which can be improved within a broad array of complex systems including critical infrastructures, ecosystems, societies and economies through proper governance. However, as one moves across these resilience discourses, it is evident that distinct concepts of resilience are in operation. For network scientists[3] resilience is understood as the ability of a network to maintain systemic integrity in the event of fault or disruption: a function of the design of network architectures measured in terms of system functionality following the removal of successive nodes and links (Lewis, 2009: 375). Resilience is thus often associated with network robustness, survivability and graceful degradation with less

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[3] Network Science is an interdisciplary field that has sought to extend the mostly quantitiative studies on networks within computer science and engineering to other scientific and social scientific applications . For an introduction see Barabasi (2002).

emphasis on regeneration or self-repair. This understanding of resilience can be compared to psychological (Werner and Smith, 1989, 1992) and sociological (Fredrickson et al., 2003, Kindt, 2006) research in which resilience is studied as a function of faculties which permit certain individuals to overcome risks and/or cope with psychological trauma better than others. Use of the term resilience here specifically relates to the capacity to return to 'normal' defined in terms of the lack of depression and the capacity to continue a similar 'way of life'. Finally, the concept of resilience found in complex ecosystems theory is defined as the "capacity of an ecosystem to tolerate disturbance without collapsing into a qualitatively different state that is controlled by a different set of processes" (Holling, 1973). Here, resilience refers not simply to the capacity to 'bounce-back' to an original state but also contains the possibility of moving to alternative stable states in a complex system (Gunderson and Holling, 2002, Gunderson et al., 2002). As these authors note, enhancing resilience by optimizing the evolutionary capacity, or 'fitness', of a system, not only increases the capacity of a system to withstand the impact of potentially destabilizing shocks, but also permits the system to quickly and efficiently organize so as to capitalize on emerging opportunities—to realise and even produce 'new normals' (Gunderson and Holling, 2002: 8). Resilience is not simply a conservative exercise, but a quality indicative of a heightened capacity to evolve towards something new.

Given the heterogeneity of both the referents and concepts of resilience it should come as no surprise that there is considerable variation in the governmental arts used to enhance resilience. Optimizing the resilience of different systems requires the exercise of distinct assemblages of specialist techniques and technologies which are informed and legitimated by expert bodies of knowledge: technical, scientific and academic. Since July 2001, the United Kingdom's Civil Contingencies Secretariat has been mandated with securing the UK from a

wide array of potential emergencies, including natural disaster, pandemics, industrial accidents and terrorist attacks through a strategy of enhancing UK resilience, understood as the "[a]bility of the community, services, area or infrastructure to detect, prevent, and, if necessary to withstand, handle and recover from disruptive challenges" (Cabinet Office, 2011). To this end, the Civil Contingencies Secretariat coordinates a complex machinery of governance comprised of both private and public agencies performing diverse functions with the common goal of enhancing resilience.

Inspired by this approach, distinct applications of resilience have been developed internationally. Distinct formulations and strategies of resilience as an approach to state security governance are being exercised in the United States, Australia and Canada, while a marked interest in the concept has been shown within Switzerland, Germany and Singapore (Bara and Brönnimann, 2011). At the level of international governance, complex historical problems such as underdevelopment, disaster risk and post-conflict reconstruction have all been recently re-problematised as issues arising, at least in part, from the lack of national resilience by agencies including the International Monetary Fund (International Monetary Fund, 1995, 2005, 2006, 2010), the World Bank (Prasad et al., 2009, Verner and Egset, 2007) and the United Nations (United Nations Development Programme, 2004, United Nations Environment Programme, 2004). Resilience is also a pervasive term within contemporary self-help literatures which promise to build individual resilience through the exercise of varied techniques of self-governance (Cyrulnik, 2009, Clarke et al., 2010, Hadfield and Hassob, 2009, Neenan, 2009). Variations in the approaches employed suggest that there is no single governmental discourse of resilience currently in operation.

Rather than treating resilience as either a unified concept or technique of governance it might be more useful to think of resilience as a *value*. As a value, resilience performs various functions with regards to governance. Firstly, it provides a *quality* in relation to which systems, populations, individuals and even behaviours can be assessed and evaluated. The concept of quality, Peter Burgess reminds us, refers both to a property which makes something identifiable and a statement regarding its standard of excellence (Burgess, 2011: 32). Attempts, currently underway, to establish a common metric for measuring resilience attest to the bureaucratic importance of these assessments (quantitative or otherwise) in allocating funding and guiding government policy (Birkmann, 2006, Brigilio et al., 2005). But it should not be ignored that resilience also operates as a value in relation to which subjects evaluate, problematise and comport themselves thus informing the exercise of techniques for the government of the self (Foucault, 1988, 2011a, 2011b). These evaluations problematise referents in different ways thus generating *objectives* for security governance in relation to which security programmes can be designed and evaluated. Finally, the value of resilience, insofar as it is vague and undefined, is functional: *facilitating* the integration of diverse agencies, departments and actors by providing the semblance of a common objective where diverse concepts are necessarily being enacted. Researching resilience as a value, rather than a concept, entails concerning one less with what resilience means and more with *how* the diverse ways in which resilience is enacted itself augments the value of this value.

It is also crucially important to recognize how the value of resilience differs from those which formerly guided security programmes within the associated spheres of civil contingencies, civil defence and the military. Indeed, one of the more remarkable aspects of the emergence of resilience discourses is how they have coincided with the problematisation

of the virtues of fortitude, robustness and stoicism traditionally associated with security (O'Malley, 2010a). Specifically security programmes rooted in the logic of protection are increasingly portrayed as hubristic, criticized for generating forms of dependency, and generally problemetised as contributing to the very conditions of insecurity which they had formerly been mobilized to eradicate. In their place a new economy of security virtues has emerged associated with 'resilient' qualities such as malleability, adaptability, flexibility and regeneration. These transformations in this economy of security virtues suggests that what is at stake in the proliferation of resilience discourses is not simply the practices through which security is pursued. Underlying these changes in what is *recognized* as secure is a shift in the semantic *meaning* of security itself.

In light of these observations we should be prompted to ask: how can we account for the emergence of resilience as a security value? This thesis performs a genealogy of resilience as an emergent security value. As a critical historical inquiry into the conditions of resilience's emergence, this genealogy aims to problematise positivistic narratives of resilience which serve to render the value of resilience self-evident by appealing to a clear origin established by scientific progress.

Genealogy and the Critique of Values:

Deleuze described genealogy as the 'true realisation of critique' (1983: 1). For while Kant advanced critique to determine the legitimate limits of the authority of influential institutions including the Church and the State, he could not bring himself to critically reflect

upon the values in whose service this critical project was mobilized. Kant, in short, failed to critically reflect upon the Enlightenment value of truth. Instead, critique was subsumed within a critical project designed to locate the limits of what was knowable in order to establish a secure foundation for truth. Genealogy would liberate critique from its service within this Enlightenment security project. Rather than securing values, most especially that of truth, critique would be folded back upon them. Foucault recognized that genealogy entailed tracing the historical emergence of those things "we tend to feel [are] without history" (Foucault, 1994: 369). As a critique of values, genealogy is directed towards the problem of accounting for the emergence of values. A genealogy of resilience aims to identify the historical processes through which resilience obtained its value and status.

Genealogy is critical history. It is a method which emerged from Nietzsche's critique of the excessive value afforded to history in Europe at the turn of the twentieth century. In the second essay of his *Untimely Meditations* (1997) entitled "The Uses and Abuses of History" Nietzsche identified the origins of this 'historical malady' within the 'demand that history be a science.' The scientification of History, Nietzsche shows, involved not only the migration of models of the natural sciences into History, but also the adoption of the scientific virtues of objectivity, neutrality and indifference by the historian. In modelling itself upon the sciences, modern History had itself become a security project: its methods fashioned to establish certainty (epistemological security), and these 'truths' to provide a foundation for action and identity in the present (existential security). Nietzsche's critique of History stemmed from his belief that modern History—taken as a repository of objective truths and 'lessons learned'— sapped at the power to live life creatively in the present; to define oneself in reference to what one *could be*. Nietzsche begins the essay by quoting Goethe: 'In any case, I hate everything

that merely instructs me without augmenting or directly invigorating my activity' (Nietzsche, 1997: 59). What was required was a critical history which could be deployed against modern History:

> the origin of historical culture- its quite radical conflict with the spirit of any 'new age', any 'modem awareness' - this origin *must* itself be known historically, history *must* itself resolve the problem of history, knowledge *must* turn its sting against itself - this threefold *must* is the imperative of the 'new age', supposing this age really does contain anything new, powerful, original and promising more life (1997: 102-3).

Genealogy was fashioned not simply as an alternative to modern History, but as an antidote to its anaesthetising effects on life. It mobilizes critique to render problematic the search for ideal origins and upset grand narratives such as the progress of reason. Operating on history, genealogy aims to critique that which is regarded as timeless. As a critique of values, genealogy proceeds historically: systematically documenting the historical emergence and evolution of that which we take to be without history.

Nietzsche rejected the idea that the foundation of values could somehow be located outside the subject. There is no transcendent source of value and nothing has value-in-itself. Instead he would understand values to be the product of processes of valuation ultimately rooted within particular modes of understanding and experiencing the world. If the source of value is thus ultimately embedded in the experience of life itself then values exist only insofar as there are valuing beings (Sleinis, 1994: 1). Nietzsche therefore understood values as the expression of particular modes of *evaluation*. Deleuze noted that this

> "implies a *critical* reversal. On the one hand, values appear or are given as principles: and evaluations presuppose values on the basis of which phenomena are appraised. But, on the other hand and more profoundly, it is values which

presuppose evaluations, 'perspectives of appraisal', from which their own value
is derived.

It is clear within Nietzsche's writing that these processes of valuing—these *evaluations*—were what ultimately preoccupied him. "Formerly one said of every morality: 'By their fruit ye shall know them.' I say of every morality: 'it is a fruit by which I recognize the *soil* from which it sprang.' (Nietzsche, 1968: 149). These processes of valuation, he insisted, are far from obvious. As much as Nietzsche was critical of those who universalized values, he was equally severe to those who sought to explain the values of values through simple utilitarian calculus which presumed that these processes were immediately accessible to the observer (See Nietzsche, 1968: 164, 385, 1989: Part 6). Values are rarely the product of immediate, self-evident rationalizations of the being who values and evaluates. Instead, values are more often the expression of evaluations formed and performed in relation to more obscure historical processes. Values are projections of particular modes of evaluation which become sedimented over time to the extent they are recalled, reactivated and reproduced. Values, while ultimately rooted within subjectivities, thus often simultaneously precede and exceed the individual subject (Burgess, 2011). Deleuze continued,

> "Evaluation is defined as the differential element of corresponding values, an element which is both critical and creative. Evaluations, in essence, are not values but ways of being, modes of existence of those who judge and evaluate, serving as principles for the values on the basis of which they judge. This is why we always have the beliefs, feelings and thoughts that we deserve given our way of being or our style of life." (Deleuze, 1983: 1-2)

In important ways then, values do not simply inform the ways in which one comports themselves. They are simultaneously produced and reproduced *through* particular modes of

being. Processes of value creation are correlative with the unfolding of ways of being in the world. Moreover, Deleuze recognizes evaluations as the element which *distinguishes* values—in both the sense that it differentiates between values (*to distinguish)* and produces value (*to be distinguished).* Indeed, Deleuze is suggesting that evaluations, understood as ways of life, are themselves defined and produced through their differentiation from corresponding values and alternative ways of life. This opening of a space between different evaluations is critical insofar as it is creative. This space, the '*pathos of distance'* at the origin' (Nietzsche, 1989: 201, 2000: 462, see also Foucault, 1994), is constitutive of new perspectives of appraisal, new forms of evaluation, and thus new forms of life. This differential element, so intrinsic to the exercise of evaluation, is later revealed by Deleuze to be the will to power.

The will to power is defined by Deleuze as "the genealogical element of force, both differential and genetic" (Deleuze, 1983: 46). It is an element common to all values. It is that which differentiates modes of being, or ways of being in the world. If the source of value lies in valuing beings, then the measure of value lies in the affective feeling of 'enhanced and organized power' (Nietzsche, 1968: 356, see also Deleuze, 1983: 57-59). The origin of all values, therefore lies in the desire to distinguish a certain mode of evaluation or 'way of being in the world' which enhances the feelings associated with an increase of power. The origin of this desire cannot be attributed to conscious psychological processes but is itself a manifestation of the will to power. "Who therefore will power? An absurd question, if being is by itself will to power..." (Nietzsche as quoted in Deleuze, 1983: 46, Cf. Dreyfus and Rabinow, 1982: 109). Power is itself not evaluated, but represents the condition of possibility for evaluations (See also Nancy, 2005). Evaluations are manifestations of the will to power.

Recalling Nietzsche's writings on the will to knowledge helps to clarify the relations between evaluation, the will to power and truth. The will to know, Nietzsche makes clear, is a manifestation of the will to power. The formation of reason and logic is an imposition onto the world proceeding from the need "[n]ot 'to know' but to schematize – to impose upon chaos as much regularity and form as our practical needs require" (Nietzsche, 1968: 278). What our practical needs require is a reduction of that which is strange and unfamiliar to that which is similar, equal, calculable, and thus intelligible. Processes of ordering, or rending familiar are necessary fictions imposed upon the world as "only when we see things coarsely and made equal do they become calculable and useful to us" (Nietzsche, 1968: 278). The imposition of categories for knowledge thus proceeds from a subjective process of valuation distinguishing what is useful from what is not. "The *valuation* 'I believe that this and that is so' as the essence of *truth"* (Nietzsche, 1968: 275). Valuations are thus intimately allied to schemas imposed upon the world to render it intelligible and thus actionable.

With Nietzsche, the "whole of philosophy is a symptomatology, and a semeiology" (Deleuze, 1983: 3). Values are recognized as signs, or symptoms, of underlying processes which themselves must be diagnosed. The genealogist must therefore discover underneath values,

> "the conditions and circumstances under which these values grew up developed and changed (morality as result as symptom, as mask, as tartuferry, as sickness, as misunderstanding; but also morality as cause, remedy, stimulant, inhibition, poison)" (Nietzsche quoted in Burgess, 2011: 30)

The focus of this genealogy is the *processes of valuation* which afforded resilience its value. Resilience is understood to be the expression of a neoliberal order of security governance. Its

appreciation as a security value is a function of the influence of this order in the field of security. Orders of governance are here understood (to use Nietzsche's terminology) as manifestations of distinct evaluations which enact specific constellations of values. As with Nietzsche's evaluations, it is crucially important not to psychologise orders of governance. Orders of governance are not the product of actor's intentions, but are particular actualizations of evolving systems of power/knowledge. This thesis proceeds from Foucault's observation that the order of power/knowledge characteristic of security is biopolitical (Foucault, 1998, 2003, 2007, 2008). This genealogy traces the historical constitution of a neoliberal order of governance in relation to transformations in the systems of power/knowledge enacted by apparatus of security. It does so through a detailed study of the governmental rationalities underpinning machineries of emergency governance within the empirical site of UK civil contingencies management.

Chapter 1 reveals the biopolitical imperative behind the formal institutionalization of British emergency governance in the final years of the First World War. It makes explicit the order of governance informing the design of this machinery and shows how this order became increasingly invested in the 'sciences' of Operational Research in pursuit of the value of stability. Each subsequent chapter traces the constitution of a rival order of governance which would consolidate around promoting the value of resilience. This process of distinction is investigated through the identification and analysis of events which problematised aspects of the established order of governance and opened a space for the colonization, consolidation and elaboration of techniques which would evolve into the neoliberal order expressed within contemporary resilience strategies. Such a history, it must be stressed, does not conclude with the 'triumph' of resilience. Nor does it purport to imply the inevitability of such a future.

Rather, it is to make explicit rival orders of governance which continue to structure the dynamics of UK Civil Contingencies through the complex patterns of resonance and dissonance produced by their simultaneous operation and struggle. The composition of resilience discourses—the ambiguity surrounding 'concepts' of resilience, the form of resilience strategies, the migration patterns of these strategies and indeed the value of resilience itself—must be understood in relation to this contest. The next section, outlines how contemporary research on the biopolitics of security assists in understanding the terms of this important contest.

Resilience and the Biopolitics of Security

In his lecture series *Security, Territory, Population* (2007) Foucault investigated the biopolitical orientation of security. The lectures served to advance his earlier analyses of biopower: a mode of power distinguished from sovereign forms of power, based on the right to "take life or let live," by the commitment to "making life live" (Foucault, 1998, 2003, 2007). Promoting and protecting life, it was clear, was operationally dependent however on the specific ways in which 'life' was understood and problematised. Tracing a genealogy of security, Foucault showed how security mechanisms originally developed to promote and protect the 'species-life' exhibited by populations: a particular enframing of life which emerged in the early eighteenth century emphasizing the species-existence of humans understood in the aggregate (Foucault, 2003, 2007). In recent years, revolutions in the scientific understanding of 'life' (advanced within the digital and molecular revolutions) and shifts in the referent of security (from 'populations' to a series of 'complex systems'

displaying life-like properties) have coincided with profound changes in the rationalities and practices of liberal security. In light of these changes, contemporary research in the biopolitics of security has asked, "What happens to the biopolitics of security when their referent object – life as species existence – undergoes profound transformation and change" (Dillon and Lobo-Guerrero, 2008: 269)?

Dillon and Lobo-Guerrero argue that these transformations must be understood as the product of complex processes of 'speciation' (Dillon and Lobo-Guerrero, 2008, 2009). Processes of speciation enact three distinct, yet interrelated, definitions enveloped within the term 'species':

> 'Species' means classification as such, classification as living thing and classification as value, specifically monetary or capital value. These three are locked into a very tight and radically interdependent triangulation…. These three poles of 'speciation' thus comprise a radically interdependent force field in which the changing correlation of forces transforms the composition of the respective 'trig' points. Each of the three—classification, living thing and valuation—operates in mutually disclosive need of the other two (Dillon and Lobo-Guerrero, 2009: 8).

Speciation, for Dillon and Lobo-Guerrero, refers to a particular, but always insufficient, ontopolitical enframing of life. Like Nietzsche, they stress the simultaneity of knowing and valuing. Particular understandings of life always already advance a schema for valuing lives, while determinations of species-life are rooted in processes of ascribing and deriving value from life. As the frameworks of intelligibility for knowing 'life' shift so too do the regimes of valuation used to evaluate lives. This thesis takes resilience to be an expression of the modes of evaluation characteristic of an emergent order of security governance. Resilience corresponds to a system of valuation which emerges alongside a speciation of biopolitical being enacted by neoliberal orders of governance.

To understand how resilience has emerged as a new biopolitical telos it is therefore helpful to review how biopolitical security orders have shifted in recent years.

In his genealogy of security, Foucault demonstrates how biopolitical techniques of governance had their precursors in disciplinary technologies forged in the late seventeenth and early eighteenth centuries exercising a 'subtle coercion' (1977: 137) on the body for the "optimization of its capabilities, the extortion of its forces, the parallel increase of its usefulness and its docility, [and] its integration into systems of efficient and economic controls" (1998: 139). Emerging through modifications in the 'anatomo-politics' of the body exercised by disciplinary technologies was a 'bio-politics' operating on the mass-body, or species-body, of the 'population'. A 'population' departed in important ways from juridico-political notions of a people or nation bound by cultural, linguistic and legal ties. The advent of the concept of a 'population' in the early eighteenth century (Foucault, 2007) was enabled by the insights of emergent academic fields including social statistics, epidemiology and biology which made it possible to understand and analyze the population as an independent biological body, characterized by its own processes, dynamics and laws which displayed a statistical regularity. As such, the population was conceptualized as a biological mass constitutive of a 'species' animated by forces of species-life rendered knowable, and thus governable, through the application of specialist knowledges (Foucault, 2007: 75). Biopower emerged as a technique of governance whose referent was no longer the juridico-political bonds of the nation, but the species-life of populations. This shift in the referent of power relations entailed the development of new techniques and technologies of government. Taken together the assemblage of power/knowledge whose biopolitical function is the protection and promotion

of the species-life of the population would, over time, come to constitute an apparatus (*dispositif*) of security (Foucault, 2007).[4]

Biopolitical technologies of security operate less in terms of prohibition, instituting moral/legal binaries of right and wrong, than on the regulation of norms governing the processes intrinsic to the species-life of populations. Security technologies operated in relation to the patterns identified within statistical maps of the aleatory 'events' which enhanced or suppressed species-life (Foucault, 2003: 246, 1998: 139). To the extent that these events displayed a statistical regularity, regulatory mechanisms could thus be introduced "to compensate for variations within this general population and its aleatory field" (Foucault, 2003: 246). As a mode of power protecting life at the normative and aggregate level biopolitical techniques sought to secure populations by regulating how the 'general' rates of incidence of contingencies correlated with biological and environmental factors. Technologies of security aimed to tame the milieu in which the species-life operated by 'establishing a sort of homeostasis...by achieving overall equilibrium that protects the security of the whole from internal dangers' (Foucault, 2003: 246).

Ultimately, Foucault's analysis of the biopolitics of security was motivated by an interest in performing a genealogy of the post-war welfare state. In his elaboration upon this line of analysis, François Ewald (1986) analyzed risk-socialization schemes as the core technology of the welfare state, extending mutual risk exchange across the entirety of the nation. However, in the last quarter of the twentieth century the rationalities and practices

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[4] Simply put, the 'coupling of a set of practices and a regime of truth form an apparatus (dispositif) of knowledge-power' (Foucault, 2008: 19). This assemblage of knowledge/power itself has a 'dominant strategic function' which "has as its major function at a given historical moment that of responding to an *urgent need*." (Foucault, 1980: 195). The study of such an apparatus entails identifying and analyzing "the *system of relations* which can be established *between*" a "thoroughly heterogenous ensemble consisting of discourses, institutions, architectural forms, regulatory decisions, laws, administrative measures, scientific statements, philosophical, moral and philanthropic propositions – in short, the said as much as the unsaid" (Foucault, 1980: 194, my italics).

comprising the social liberalism of the welfare state were increasingly problematised (e.g. Barry et al., 1996b, Foucault, 2008, O'Malley, 2004, Rose, 1993, 1996a, 1996b). The primary concern of contemporary security discourses is not the 'general' aleatory phenomenon which were the focus of early biopolitical security mechanisms, but the high-impact low probability threats—the 'unknown unknowns'—which evade actuarial capture and strain actuarial-based technologies of risk management (Daase and Kessler, 2007, Ericson and Doyle, 2004, Massumi, 2009). New techniques of risk management have risen to prominence, which are not grounded in probabilistic methods but instead look to invoke a cross-section of the multiple futures which *could* actualize in order to facilitate preparation and possible pre-emption (Anderson, 2010a, 2010b, Aradau and Munster, 2007, Cooper, 2010, de Goede, 2008a, de Goede and Randalls, 2009, Lakoff, 2007). It is said in turn that liberal subjects cannot be sufficiently protected from risks by the state, and so must be responsibilised through good governance to become autonomous actors with a moral responsibility to better manage their own individual risks (Miller and Rose, 2008, Rose, 1996a, O'Malley, 1996).

Resilience strategies have risen to prominence in response to the darkening of liberal security imaginaries haunted by unknowable and potentially catastrophic futures (Aradau and Van Munster, 2011). It resonates with logics of precaution (Aradau and Munster, 2007, Ewald, 2002, Massumi, 2005b), preparedness (Aradau, 2010, Collier, 2008, Lakoff, 2007, Collier and Lakoff, 2008a) and pre-emption (Cooper, 2006a, de Goede, 2008b, de Goede and Randalls, 2009) within an increasingly influential anticipatory assemblage of security seeking to govern the radical contingency of contemporary threat (Dillon, 2006, 2007, 2008, Dillon and Reid, 2009). In stark contrast to risk-based logics of protection, resilience strategies aim at the production of systems capable of living-with, or even *embracing* (Baker and Simon, 2002),

risk. In contrast to the predictive and standardizing techniques of the Welfare State, resilience technologies look to manufacture systems and subjectivities capable of adapting to change and uncertainty (Lentzos and Rose, 2009, O'Malley, 2010a).

The radical transformation in the rationalities and practices underpinning biopolitical security techniques has led some to question whether this represents the 'death of the social' (Rose, 1996a) and others whether these techniques might still be rightfully recognized as biopolitical (Massumi, 2009)? This thesis maintains that a biopolitical analytic is most appropriate for understanding these changes. It does so in accord with contemporary research interested in the biopolitical implications of the profound changes in the understanding of species-life advanced within the associated digital and molecular revolutions (Rose, 2007b, Dillon and Lobo-Guerrero, 2008, 2009, Dillon and Reid, 2001, 2009, Cooper, 2006a, 2008, 2010). Dillon and Lobo-Guerrero explain that taken together these revolutions are advancing an particular speciation of life understood as "a complex adaptive and continuously emergent, informationally constituted, system" (2009: 1). Resilience corresponds to a mode of valuing life in relation to its capacity to adapt and transform through processes of complex emergence. Such a speciation represents a distinct way of understanding, problematising and valuing life. As such, it issues new imperatives to biopolitical governance (Cooper, 2006b, 2008, Dillon and Lobo-Guerrero, 2008).

Rather than struggle to tame the milieu of the population, contemporary biopolitical governance is directed towards mastering the conditions of regeneration and transformation of a range of open systems displaying the life-properties of complex emergence. Resilience is a measure of evolutionary fitness required to thrive in radically uncertain and precarious worlds. Drawing on a myriad of specialist knowledges, resilience initiatives seek to invest life with the

capacity to quickly and efficiently adapt, regenerate and transform in the presence of an emergency event. The contingency of emergent species-life and the correlative study of its complex adaptive behaviour respectively provide a target and an epistemic base for biopolitical security interventions. When life became understood in terms of its pluripotentiality (Waldby, 2002, Cooper, 2006b, 2008)—that is, capable of differentiation through multiple developmental potentialities—the objective of biopolitical security initiatives shifted to asserting "control and command [over] the morphogenetic process itself" (Dillon and Lobo-Guerrero, 2008: 287). The knowledge of how to provoke conditions of emergence to make life live may also inform initiatives designed to pre-empt the emergence of undesirable forms of life in increasingly effective and economical ways (Cooper, 2006a). Mastery over the conditions of emergence for life-itself thus offers a new threshold for biopolitical governance—but it also provides a new science for a thanatopolitics directed to killing those forms of life found inimical to liberal life (e.g. Gregory, 2011a, 2011b). The value of resilience represents the new telos of these biopolitical security initiatives.

Chapter Outline:

The focus of this biopolitical genealogy of resilience is on the historical processes which have enabled resilience to emerge as a security value guiding contemporary UK civil contingencies management. It takes as its empirical space, the historical evolution of a British machinery of governance for responding to emergencies. A machinery of governance is understood as a localized actualization of broader and more abstract apparatus of security. A

concerted analysis of this particular machinery of governance is conducted for the purpose of making explicit distinct, and indeed rival, rationalities of governance which can be read from its evolving design. This history is not performed with the intent of tracing the growing perfection of its methods nor to morally condemn the rationalities of governance formerly animating this machinery by, as Foucault put it, "writ[ing] a history of the past in terms of the present" (1977: 31). Rather, in presenting a 'history of the present' this thesis aims to identify, through historical elucidation, distinct orders of governance still discernible within the resilience discourses of UK Civil Contingencies.

While this study proceeds chronologically it does not purport to provide an extensive history of UK civil contingencies management.[5] Genealogy thus does not abide by the Platonic duty to representation (Deleuze, 1990b), but aims to effect a problematisation. Rather than the unity and coherence of a discovered essence, a genealogy of resilience traces the historical contingency of the processes contributing to the actualization of this value in the field of security. Each chapter is focused on analysing an important event in a constitution of resilience discourses. Chapter 1 analyzes the inception, and early years, of a British machinery of governance for managing emergencies, detailing both its biopolitical orientation and the growing scientification of its operations. Chapter 2 traces the earliest development of techniques associated with resilience in respect to the security problematics posed by the advent of thermonuclear war and the threat it posed to the 'survivability' of the nation. Chapter 3 focuses on the development of resilience discourses within the complex ecosystems theory of the 1970s. It compares the programme of governance advanced within these discourses to that being advanced by neoliberal critics of economic Keynesianism at that time

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[5] More detailed histories of British emergency planning and response are provided by Jeffery and Hennessy (1983) and Geary (1985).

to make explicit the epistemological order supportive of an order of governance common to resilience and neoliberal discourses. Chapter 4 details the operationalisation of resilience strategies within the realm of state security via the application of concepts and strategies developed within the Revolution in Military Affairs (RMA) which proved influential in the reorganization of UK civil contingencies management after the collapse of the Cold War. Chapter 5 investigates governmental programmes designed to promote 'resilient subjects' as a means of opening a discussion on the ethical and political implications of resilience strategies. A brief conclusion summarizes the argument and discusses the implications of this genealogy for resilience research.

Chapter 1

State of Emergency

At what point do the emergency powers invoked by liberal governance risk slipping into authoritarianism? This problematic has concerned British legislators and emergency planners over the course of the twentieth century in the context of the drafting and execution of emergency powers. From its initial drafting in 1920 to when it was eclipsed by the Civil Contingencies Act in 2004 the British Emergency Powers Act has been evoked twelve times—almost exclusively in the context of labour unrest (Jeffery and Hennessy, 1983). The requirement to set legislative limits on the ability of the Government to arbitrarily declare a state of emergency was a precaution taken to preserve the legitimacy and authority of the state in the context of the challenge issued by such an event. Setting limits on the exercise of sovereign power ensured that the emergency powers afforded to liberal governance in the context of a 'state of emergency' did not risk a slippery slope into authoritarianism. This was, however, only the (not uncontroversial) public face of UK emergency management. Preceding the legislation of the Emergency Powers Act, and existing alongside it over the entirety of the legislation's history, was a secret machinery of emergency governance. The secrecy surrounding this machinery attested to the difficulty of reconciling liberalism with

emergency management when the imaginary of 'the emergency' was focused on major industrial disputes.

For Carl Schmitt (2005) it was precisely this concern with legitimacy, and in particular, the setting of legislative limits on emergency powers, which dangerously weakened the capacity of liberal governments to respond to 'the exception'. Schmitt famously commences *Political Theology* with a definition of political sovereignty: "Sovereign is he who decides on the exception" (2005: 5). Schmitt's emphasis on *who decides* rather than *how to decide* on the exception corresponds to his critique of normative liberal approaches to declaring a state of emergency. For Schmitt, no legal norm can be given which defined in advance the exceptional conditions under which the constitution giving authority to this norm could be suspended. Under these conditions, only the sovereign—that political force existing prior to the law—may decide on the exception, and institute a state of emergency under which the essence of the legal form could be secured. For Schmitt, the sovereign's capacity to decide on the exception, and thus invoke a state of emergency under which constitutional law is suspended, displays the primacy of the figure of the sovereign over and above the constitution from which their power is said to derive. By subordinating the power of the sovereign to law, Schmitt suggested that liberal states were considerably weakened in their capacity to respond to exceptional events which existentially threaten the legal order of the state.

In recent years, Schmitt's writings on the state of exception have received renewed attention. Assisted by the Agamben's engagement with these ideas (Agamben, 1998, 2005), the state of 'exception/emergency' has been utilized as a paradigm for analysing the exceptional measures resorted to by liberal regimes in the context of the war on terror (Aradau, 2007, Doty, 2007, Huysmans, 2004, 2008, Johns, 2005, Neal, 2006, 2008a, 2008b, 2010). As

important as this work has been, considerably less attention has been paid to the concrete mechanisms with which 'the emergency' has been historically governed within liberal states.[6] The risk is that in studying the 'state of exception' as a condition of possibility for political sovereignty, one can easily overlook the considerable variation in the ways in which 'the emergency' is imagined and responded to when actual 'states of emergency' have been historically invoked. The focus of this chapter is therefore on the social and political conditions under which UK emergency legislation and a machinery of emergency governance emerged in the twentieth century. It is motivated by the proposition that an analysis of the conditions of emergence of liberal arrangements for responding to emergencies is equally revealing of the power structures supporting liberal governance. Specifically this chapter demonstrates, firstly, the biopolitical underpinnings of emergency governance from its formal institutionalization, and secondly, how this biopolitical imperative was differentially strategized by two distinct orders of governance between 1919 and 1970.

The biopolitical enframing of British emergency governance is clear within Emergency Powers legislation. From the Emergency Powers Act (1920) until the drafting of the Civil Contingencies Act (2004) a request by the British Government to the sovereign to declare a state of emergency has been legislatively conditioned on the presence of a threat to 'the essentials of life' to the community. This immediately raises important political questions: What is essential to life? How has this changed over time? How were these essentials of life determined? What is understood by 'life' here? And finally, what form of life is thus being protected and promoted by these security technologies? This chapter aims to address these questions by tracing a genealogy of the 'essentials of life' focused on locating the historical

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[6] For an exception see Anderson and Adey (2011b).

conditions of possibility for such a category to emerge. Drawing on archival research, this chapter traces the 'essential of life' to the logistical requirements perceived as 'essential' for Britain's ability to sustain the war effort in the First World War and shows how this category became enshrined in UK emergency powers legislation in the inter-war years in the context of the threat posed by trade unionism.

The second line of investigation pursued in this chapter focuses on how the 'essentials of life' have been secured. In doing so it argues that two distinct orders of governance can be discerned in the field of UK emergency management between 1919 and 1970. These orders are distinguished on the basis of the techniques and rationalities employed to manage contingency. The chapter begins with the first of these orders: tracing its military genealogy and detailing how it informed the initial design of the machinery of emergency governance which emerged at the end of the First World War. Next, this chapter shows how this order was slowly displaced by the growing scientification of contingency management over the course of the Second World War by the influence of Operational Research (OR). The persistent dialogue between UK emergency management and Civil Defence forged an avenue for this 'scientific' order of governance to colonize UK emergency management in the period following the Second World War.

Taken together, these two lines of inquiry allude to the particular speciations of life enacted by biopolitical machinery of emergency governance. In tracing the distinct orders of governance underpinning early British emergency response this chapter demonstrates that what was at stake in the contest between these rival orders of governance was not simply the authority to manage contingencies but the very nature of contingency itself. As the source of contingency shifted from the irrationality of human emotions, to the architecture of 'vital

systems' so were the imaginaries of contingency themselves reconfigured. Uncertainty was rendered calculable in the form of risk, thus making it amenable to 'scientific' forms of management. The distinct orders of government investigated here thus operated in relation to different problematisations of life and imaginaries of uncertainty.

Harnessing Uncertainty: *Esprit de Corps* and Moral Forces

By the Second World War the notion of 'morale' had become elevated to a key strategic concept in the British war effort. Civilian morale was understood as a vital prerequisite for the continuation of the war effort. Maintaining the morale of the British population required its constant monitor through the application of a range of quantitative instruments developed by sociologists late in the inter-war years (Orr, 2006). Whilst detailed weekly public opinion reports were being produced by the Ministry of Information (McLaine, 1979), Operational Researchers employed across the British military were busy developing quantitative metrics to guide offensive strategies specifically targeting enemy civilian morale including strategic, or 'morale', bombing campaigns. Within the context of total war—a mode of conflict which enveloped the whole of the nation within the war effort—civilian morale was a significant preoccupation of wartime governance. Given the significance of considerations of civilian morale to the design of early British machineries of emergency governance it would be beneficial to undertake a brief genealogy of morale here. Tracing this genealogy will, in turn, reveal the contours of an order of governance which emerged

alongside morale and which can discerned within the rationalities of early UK emergency governance.

Given the predominance of scientific approaches to the measurement of morale by the Second World War, it is curious that a genealogy of morale locates its origins in the explicitly romantic military discourses of late eighteenth century France which consolidated in strict opposition to what some military theorists considered to be the excessive scientification of their occupation by strategists such as Bülow and Jomini. From the middle of the eighteenth century an influential strand of Enlightenment military theory sought to significantly reduce, if not eradicate, the contingency of war through the application of scientific method to the battlefield (Gat, 1989). A pervading sense that universal laws, such as those recently discovered by Newton, could be uncovered for the conduct of battle motivated efforts to discover these laws and systematically order the components of one's own war effort in accordance with them (Gat, 2001: 30). Geometrical principles which had been applied to bombardment and fortification were increasingly extended to inform military formations and tactics which became increasingly rigidified and subject to hierarchical control (Bousquet, 2009: 53-55, De Landa, 1991: 40-41). In an associated effort, military training and drilling took on special significance in the production of highly disciplined, orderly and predictable troop regiments, perhaps best exemplified by the so-called 'clockwork armies' of Prussian monarch Fredrich II. The clockwork mechanism, as key metaphor and abstract machine operating within various discourses including those of the military during this period (see De Landa, 1991, Landes, 2000, Bousquet, 2009), provided an ideal for military order based on precision, regularity and ultimately, predictability (see Foucault, 1977: 135-141).

The organization of the Napoleonic armies departed in significant ways from the rigidly mechanistic armies of Fredrick the Great which had begun to display faults over the course of the Seven Year's War (Bousquet, 2009: 76). The French armies were highly informed by the French military theorist Guibert who, while still very much committed to a scientific approach to war, developed manoeuvres and formations which permitted increased flexibility and autonomy for troops in battle (Gat, 1989: 43-53). Military historian, Martin Van Creveld explains "whereas Napoleon's opponents sought to maintain control and minimise uncertainty by keeping their forces closely concentrated, Napoleon chose the opposite way, reorganising and decentralising his army in such a way as to enable its parts to operate independently for a limited period of time and consequently tolerate a higher degree of uncertainty" (quoted in Bousquet, 2009: 77). This autonomy was enabled by, and reflected the ideals of, the popular composition of the Napoleonic armies whose commitment in the years following the Revolution was less a concern than that of conscript armies.

The phrase *esprit de corps* has been traced to 1780.[7] Its emergence would coincide with a profound restructuring in the tactical organization of fighting force within the Napoleonic armies. *Esprit de corps* referred to the specifically intangible 'spiritual' (*esprit*) or 'moral' (*morale*) force which supplemented the physical capacities of a military unit.[8] Napoleon, whose armies were organized around the exploitation of this moral force vis-à-vis the more numerous German army, famously claimed that "[m]oral force rather than numbers decides victory. The moral is to the physical as three is to one" (Napoleon quoted in Englund,

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[7] 'Esprit' *Online Etymology Dictionary,* http://www.etymonline.com/index.php?term=esprit accessed 26 October 2011.

[8] The etymology of the English 'morale' has been traced to 1831 and stems from a confusion between *le moral* (temperament), associated with the notion *esprit de corps,* and *la morale* (morality). See 'Morale' *Online Etymology Dictionary,* http://www.etymonline.com/index.php?term=morale&allowed_in_frame=0 accessed 26 October 2011.

2004: 105). For Napoleon, success in war rested on the ability to exploit that which exceeded calculation and scientific planning on the battlefield by learning to nurture, augment and ultimately channel this powerful, natural force towards the commander's own martial ends. In doing so, the Napoleonic armies refigured the very engine of the war machine. Departing from the mechanistic diagram operationalised by Fredrick's war machine, the Napoleonic armies were designed to harness, augment and direct the passions of the soldiers themselves as a martial force.

The profound reorganization of military tactics and training around the concept of e*sprit de corps* was rooted in a profound re-evaluation of the military body as the object of knowledge and power within the military sciences. In *Discipline and Punish* (1977) Foucault meticulously documented how the mechanical body "which had for so long haunted those who dreamt of disciplinary perfection" (1977: 155) was displaced by the natural body: "the bearer of forces and the seat of duration; it is the body susceptible to specified operations, which have their order, their stages, their internal conditions, their constituent elements" (1977: 155). The natural body was thus an object whose inherent mechanisms and processes functioned as a limit to the exhaustive ordering which had previously motivated disciplinary practices. Discipline had to identify and work in accordance *with* the natural laws and processes of the body if it was to harness their power. Discipline was thus dependent upon a 'political anatomy' of the natural body—a detailed regime of knowledge of the natural mechanisms of the body—to direct disciplinary techniques 'exercising upon it a subtle coercion, or obtaining holds upon it at the level of the mechanism itself' (Foucault, 1977: 137). Discipline thus functioned as a technology of power which simultaneously "increases the

forces of the body (in economic terms of utility) and diminishes these same forces (in political terms of obedience)" (Foucault, 1977: 138).

Coinciding with their spatial and temporal re-organization of bodies, Foucault identifies an interest amongst military scientists in very surface of intersection between the body and the weapon, tool or machine. The concentration upon this surface of contact, Foucault explains, gives rise to an 'instrumental coding of the body' (1977: 153): a way of viewing the body which renders it amenable to techniques of governance aiming at the integration of body and tool such that "over the whole surface of contact between body and the object it handles, power is introduced, fastening them to one another" (1977: 153). Disciplinary power, which "appears to have the function not so much of deduction as of synthesis, not so much of exploitation of the product as of coercive link with the apparatus of production," is thus instrumental in production of what Foucault will term the 'machine-body complex' (1977: 153). To the extent that the 'natural' body of the soldier can be synthesized with the weapon, tool or machine, it can also be fastened to other bodies within larger organic-machinic collectivities to compose the mass 'body' of the military *corp.* Fredrick the Great's clockwork armies would thus be displaced by a schema of military order no longer based upon mechanistic diagrams, but on the diagram of the natural organism whose martial force was synonymous with the very life force which animated it. In interrogating the military genealogy of biopower, Foucault identified a key site from which to investigate the very transformations in the human sciences which he documented in the archaeological analysis of *The Order of Things* (2002)*.* This transformation*,* Foucault argued, pertained to a discursive shift in emphasis from the external, visible form of representation, to the internal, non-visible generative forces. This discursive shift towards the immanent force of production acted as a

condition of possibility for the simultaneous emergence of the academic fields of biology, political economy and general grammar.

Morale is not synonymous with life. Rather, morale is a rough measure of the temperament and vitality of life forces which are themselves unquantifiable, non-classifiable, yet unmistakably present. It is the external expression of the interior, non-visible and thus directly unknowable forces of 'life-itself.' At the collective level, morale is a sign of the cohesion of a group; their desire to pull together in order to achieve a common goal. Morale is a barometer of the intangible vital force present within, and animating, the individual and/or collective body (*corps militaire*). Clausewitz describes moral forces as the "spirit which permeates the whole being of war" yet cautions that "they will escape from all book-analysis, for they will neither be brought into numbers nor into classes, and require to be both *seen* and *felt*" (Clausewitz, 1997: 150). Insofar as it is a sign, morale itself cannot be directly operated upon. Instead, morale is governed through all those things which biologically sustain the body and affect its excitability. High morale is associated, on the one hand, with adequate training, rest, food and drink: all those things associated with the biological—that is material— dimension of the body. On the other hand, these requirements can be augmented, or supplemented, through appeals to the immaterial spiritual or affective dimension of the body.

Clausewitz, a great admirer of Napoleon, recognized the profundity of the transformations occurring within military order and presented within his celebrated military treatise *On War* a novel theorization of modern combat rooted in the irreducible uncertainty of the fog of war. The volatile emotions stirred up in war are the source of tremendous force, but also a primary source of uncertainty. While fear is of greater concern, Clausewitz cautions that boldness too can potentially interfere with obedience to military command (1997: 159).

Discipline as a moral technology is primarily concerned with reducing the uncertainty inserted into war by emotions through the cultivation of courage. Courage, "the feeling of one's own power" (1997: 87), acts as a counterbalance to the instinct of fear. It concerns itself with moral, as opposed to physical preservation. According to Clausewitz, courage is a virtue naturally present in some but capable of being instilled through habit and custom in others (1997: 153). Discipline is thus also concerned with converting boldness to courage by 'submit[ing] itself to demands of a higher kind, to obedience, order, rule, and method" (1997: 153).

If, for all the talk of moral forces in *On War,* the art of discipline receives little discussion it is not because it is unimportant. Rather, Clausewitz's concern lay primarily with the self-discipline of the military commander whose courage stems from responsibility (Clausewitz, 1997: 40-60). Clausewitz recognizes the seduction of certainty and, as such, spends little time in demonstrating how it can be bolstered. No amount of discipline can eliminate uncertainty entirely, nor should it insofar as this would amount to marginalizing the force of the passions within battle. Uncertainty must be responded to with the commander's courage to make decisions based on experience and intuition. Moral forces are both a primary source of uncertainty and the means of overcoming the dangers of uncertainty. Uncertainty therefore opens a space for the creativity and the freedom to exert independent influence on the war—albeit the commander's freedom and the commander's creativity, reinforcing the authoritarian structure of the military. Contingency, for Clausewitz, represents not simply an ineradicable condition of operability but also a condition of possibility for heroism.

Clausewitz's theory of war emphasized the skilful balancing of the 'remarkable trinity' of emotion (attributed to the nation), rationality (attributed to state policy) and chance (the

domain of the commander). Unlike Machiavelli's *fortuna*, chance here cannot be attributed to fate. Rather, chance is the product of epistemological finitude in relation to the irreducible complexity of war. The will to certainty, though seductive, is premised on a false hope. Insistence on certainty can only serve to delay decision or encourage decision based on suspect intelligence. Clausewitz cautions of "the uncertainty of all knowledge" (Clausewitz, 1997: 52). Just as significant as his understanding of the irreducible character of uncertainty in battle is his advice on how to respond to it.   Like Machiavelli's Prince, the good commander must seize chance and direct it to his own advantage. This particular acumen, the commander's 'genius' (Clausewitz, 1997: Book 3, iii), is composed of a mixture of intuition and experience. It is displayed in courage and creativity required to make decisions within an uncertain environment. War rather than a science, is understood as an art requiring the balance of the moral and creative aptitude of the commander (see Herbig, 1986). With the advent of total war, and the absorption of the nation into the war machine, the morale of the nation would become an increasing concern, opening an avenue for broader application of this order of governance to civilian populations.

War Becomes Vital: Securing the Essentials of Life in the First World War

By mid-war the mounting success of German submarines in disrupting the circulation of Allied mercantile ships was becoming a major concern. Italy was facing an acute shortage of food, coal scarcity was jeopardizing French and Italian munitions production, while imports of steel from the United States were becoming increasingly precarious. In January 1917, an

Allied Naval Conference was organized to coordinate naval defences. In the opening speech to conference delegates, British Prime Minister Lloyd George emphasized that Allied victory was conditional upon control of the seas and the security of essential imports, defined as "raw material and other supplies essential to the prosecution of the war and to the existence of the population."[9] The consequences were clear: "[t]he Germans, without inflicting a military defeat upon us, could win the war by destroying our mercantile marine."[10]

The Italian delegation, in obvious accord with Lloyd George's outlook, insisted that the British and French Cabinets be made aware that "prolongation of this state of things is bound, within a brief period of time, to result in curtailing the powers of resistance of such Allies in relation to the war."[11] Lloyd George made clear in his conclusion that Allied cooperation to secure these vital flows was critical to the war effort:

> Our interest is common, and we ought not to allow comparatively little things to interfere with what, after all, is essential to the life of each country-essential to the life of Italy, essential to the life of France, essential to the life of Great Britain, and essential to something which is more important than any nation, and that is the future of the whole of the human race, which, I think, is dependant (sic) upon the success of the Allies in this great war.[12]

If, as Lloyd George insisted, the future of 'life' rested on Allied success in war, so was an Allied victory taken to be dependent upon the morale of the nation. Indeed, if 'massacres ha[d] become vital' (Foucault, 1998: 137), it was not simply because the lives of individual soldiers were at stake, nor even that war's lethality had swelled to the extent of threatening the lives of civilian populations. War had become vital insofar as total war mobilized the life-

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[9] Report of Allied Naval Conference, 23 and 24 January 1917, CAB/24/6 , pg. 3
[10] Ibid. pg. 7
[11] Ibid. pg. 3
[12] Ibid. pg. 9

energy, or biopower, of whole societies as the animating force of a war machine premised on the defence of the 'life of the nation' (Foucault, 2007, Foucault, 1998, Reid, 2006). Here, the life of the nation was not simply annexed through conscription to be sacrificed in the event of war (although it certainly was as well). Life was a positive force whose productive capacities were to be harnessed within burgeoning war industries integral to modern total war in its industrialized form.

Insofar as life was vital to the conduct of total war, the measure of the nation's vitality became an important security consideration for the state and the concept of morale, which had formerly been circumscribed to military applications, increasingly applied to considerations of the belligerence of civilian populations. The 'essentials of life' would emerge in this respect as an important preoccupation of the wartime administration. The essentials of life were the raw materials underpinning the nation's morale. To the extent they were both visible and quantifiable they could be employed as the referent of security practices whose true objective was the maintenance of morale. The essentials of life were not therefore synonymous with the minimum requirements for biological life. Instead, and like the terms 'essential imports', 'essential services' and 'essential industries' which 'the essentials of life' routinely appear alongside in discussion, what is essential is defined in relation to its indispensability to the war effort.[13] The link between morale and the 'essentials of life' is made explicit in a note regarding the content of a speech Lloyd George was to make in Scotland in 1917. In announcing a government commitment to "cheapening the essentials of life" Lloyd George was encouraged to "announce that the Government recognise that, in order to keep up the

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[13] See 'Essential industries' as listed within Cabinet Memo, "Problem of the Maintenance of Armed Forces" November 1917, CAB/24/4; Cabinet Memo "The Man-Power Situation: 1917-1918", 17 June 1918, CAB/24/54

moral of the nation, it was necessary, not only to have sufficient food, but ample food at reasonable prices."[14]

The meaning of 'life' encapsulated within the phrase 'essentials of life' was a specific enframing of life forged within the logistical requirements for total war (Reid, 2006); an understanding of life as potential martial force to be harnessed by a war-machine compelled to defend the 'life' of nations associated with the Allied Powers. It is precisely this militarized enframing of life contained within the notion of 'essentials of life' which would form the referent for a biopolitical security apparatus fashioned in the final months of the First World War.

A British Machinery of Emergency Governance

The demands of total war required a profound restructuring of the administrative apparatus of the British state. A *dirigiste* command economy was introduced to direct the transition of industry to a war footing and manage the supply and allocation of resources. New departments of state were established—firstly, the Ministry of Munitions in 1915, followed by shipping, labour, food and national service in 1916—and essential industries including coal-mining, railways and munitions production became controlled by the state (Jeffery and Hennessy, 1983: 4). On the legislative side, emergency powers granted by the 1914 Defence of the Realm Act (DORA) gave government departments the authority to intervene into the normal processes of the economy to commandeer buildings and goods for

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[14] War Cabinet Minutes, 27 June 1917, CAB/23/3

the war effort. Industrial disputes within essential industries were effectively made illegal by the 1915 Munitions of War Act. These measures, however, were not entirely effective in preventing industrial action. Wartime strikes including the stoppage of engineers on Red Clydeside (1915), the miners' strike in South Wales (1916), and a wave of disputes in the summer of 1918 (which included a strike by the London Metropolitan police) challenged the state's capacity to ensure the provision of essential goods and services 'essential' to the morale of the population, and thus the war effort (Jeffery and Hennessy, 1983: 4-5).

In February 1919, in response to the combination of a tube and omnibus strike and a potential electricians stoppage in London, the War Cabinet secretly appointed the Industrial Unrest Committee (IUC). The IUC was a special Cabinet Committee chaired by the Home Secretary Edward Shortt and including representatives of the War Office and Admiralty mandated with making 'the necessary arrangements for dealing with any situation that might arise from industrial unrest both at the present moment and in the future' (as cited by Jeffery and Hennessy, 1983: 10). Organizationally, the IUC was composed of five sub-committees: The first four (public utility services, transport, communications and electric works) were each responsible for ensuring the continuity of essential services through the coordination of replacement services run by volunteers and naval ratings, while the fifth (protection) was responsible for the maintenance of order and the protection of 'blacklegs' (Jeffery and Hennessy, 1983: 11). Servicemen, despite their reluctance, were relied upon significantly within these plans to maintain order, to escort workers across picket lines, and to act as replacement workers themselves (Jeffery and Hennessy, 1983: 13)—duties which servicemen had indeed performed for many years predating the First World War (See Geary, 1985, Knowles, 1952). While the transport strike ended shortly thereafter and the electricians strike

never materialised, the foundations were set for a civil contingencies organization designed to ensure the continued operation of essential services in the face of industrial unrest so that they would not compromise the war effort.

In subsequent months this framework would be elaborated upon. Contingency plans for countering a major industrial dispute were drawn up based upon the construction of a list of essential services (Jeffery and Hennessy, 1983: 12). Food supplies topped the list followed by the maintenance of war supplies, household coal, sanitary services, lighting and the transport and communication necessary for the provision of government.[15] A scheme for military guard of these essential services was also prepared. In September 1919, in the face of a potential national railway strike, the IUC was replaced with the 'Strike Committee': a body established on a permanent basis with stronger executive powers than the IUC. The Strike Committee would be headed by Eric Geddes, the Minister of Transport during the war. Under Geddes direction, contingency plans were made for the road transport of essential supplies and for the recruitment of volunteers to act as strike breakers. The Strike Committee proved so useful that it was agreed in October that, rather than dissolve the Committee, a nucleus of the existing organisation be preserved (Geary, 1985: 56).

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[15] In the event of a strike essential services are listed as...

  1. The transport and distribution of essential food supplies
  2. The maintenance of war supplies
  3. The maintenance of essential supplies of household coal
  4. The maintenance of sanitary services
  5. The provision of a minimum of lighting
  6. The maintenance of transport and communication necessary for those purposes and for the working of government itself
  7. The protection of all engaged in the above Services (Cabinet Memo, 16 December 1919, CAB/24/95).

This nucleus organization would be renamed the Supply and Transport Committee (STC)—an intentionally ambiguous title whose purpose was to distract attention from the politically sensitive operations of the organization (Geary, 1985: 54). The STC subdivided Britain into eleven regions each to be under the control of a District Commissioner responsible for preserving order and ensuring the supply of essential goods and services (Coaffee et al., 2009: 61). The first of these responsibilities required the coordination of military, police and volunteer forces, such as the Special Police or Citizen Guard, to maintain order and ensure public property was not damaged. The second involved overseeing the recruitment of volunteers through Volunteer Service Committees (VSCs) to act as replacement bodies for essential services. Contingency planning within the STO was thus primarily directed towards ensuring that in the event of industrial action, this nucleus organization could expand to meet the needs of the situation, including most notably the recruitment of sufficient numbers of volunteers required to replace striking workers.

By the end of the war, a significant contingencies apparatus had therefore been constructed to ensure that industrial unrest would not undermine the viability of the war effort. However, as the war wound down, statesmen would find this machinery difficult to part with. The STC was especially seen as indispensable in light of the continued threat posed by industrial unrest. This concern reflected not only the extent to which industrial unrest weighed on the minds of statesmen at this time. It also displayed the extent to which the security of the 'essentials of life' had swelled from a priority of military governance to an imperative of liberal governance more generally. No doubt aided by the rhetorical power of the phrase itself, the security of the 'essentials of life' would appear as so obvious a duty of

liberal governance as to deflect attention from the question of the form of 'life' being protected and promoted.

Essentials of Life in the Emergency Powers Act (1920)

The post-war challenge to Government was clear in the minds of statesmen. Labour union membership had nearly doubled over the course of the war, rising from 4,189,000 in 1913 to 8,081,000 in 1919 (Desmarais, 1971). This was no doubt in part due to the considerable credibility afforded to labour unions by government attempts to nurture friendly relations during the war. Given their newfound responsibility as employers within essential industries, the state engaged with labour to ensure their cooperation with the war effort: labour leaders were actively consulted on policy questions and Labour Party members were introduced to government for the first time (Jeffery and Hennessy, 1983). But with the end of the war, the swelling of industrial union membership combined with the recent success of the Russian Revolution caused considerable disquiet for Government. The concern was further exacerbated by the influence of the Triple Alliance, a coalition formed in 1914 of the three major unions of the time: the Miners Federation of Great Britain, the National Union of Railwaymen and the National Transport Workers' Federation. The potential of the Triple Alliance to organize a national general strike was taken to represent a serious challenge to the monopoly of power held by central government.

In a telling interview with the leaders of the Triple Alliance in 1919 Lloyd George provided insight into the particular fears that trade unions posed to the state…

'Gentlemen, [said the Prime Minister] you have fashioned, in the Triple Alliance of the unions represented by you, a more powerful instrument. I feel bound to tell you that in our opinion we are at your mercy. The Army is disaffected and cannot be relied upon. Trouble has occurred already in a number of camps. We have just emerged from a great war and the people are eager for the rewards of their sacrifices. And we are in no position to satisfy them. In these circumstances, if you carry out your threat and strike, then you will defeat us.'

'But if you do so,' went on Mr. Lloyd George, 'have you weighted the consequences? The strike will be in defiance of the Government of this country and by its very success will precipitate a constitutional crisis of the first importance. For, if a force arises in the State which is stronger than the State itself, then it must be ready to take on the functions of the State itself, or withdraw and accept the authority of the State,' asked the Prime Minister quietly, 'have you considered, and if you have, are you ready?' (as cited in Jeffery and Hennessy, 1983: 6-7)

For Lloyd George, the threat posed by trade unionism was not simply a challenge to the functioning of the economy and the terms upon which it operated. It was a direct challenge to the monopoly of power held by the state. Labour unions were taken to be a rival centre of power whose capacity to organize a nation-wide general strike undermined the authority of the state. Strikes were therefore not just disruptive—they were a direct threat to the state's capacity to maintain order and an affront to the legitimacy of the state to govern. The spatial form of the strike—with its amassing of individuals—was itself a symbolic demonstration of the power in solidarity of the unions contra the state. As such, they were responded to by policing techniques aimed at dispersing this mass through techniques including baton charges, cavalry charges, and the 'flying wedge'. The preservation of a government strike-breaking machinery was, in this context, taken to be essential to ensuring that coordinated strikes would not undermine the authority of the state. Government officials were acutely aware however that the declaration of official peace meant the imminent expiry of the wartime

powers provided by DORA, and with it, the legislative basis for the civil contingencies machinery. A precedent was placed on drafting peacetime emergency powers legislation to ensure the continued functioning of the STO.

The STC was asked to advise on the emergency powers required by Government to address a major industrial dispute, and these would be used to construct the Emergency Powers Act (EPA) of 1920 (Geary, 1985: 54). The act outlined the conditions under which Government had the authority to request a state of emergency from the sovereign. A state of emergency was legislatively permitted when the supply and distribution of the "essentials of life to the community"—listed as food, water, fuel, light, and the means of locomotion—were considered to be threatened by "any persons or body of persons" (as cited in Jeffery and Hennessy, 1983: 270). Emergency legislation would afford the state "such powers and duties as His Majesty deems necessary for the preservation of peace, for securing and regulating the supply and distribution of food, water, fuel, light and other necessities, for maintaining the means of transit or locomotion, and for any other purposes essential to public safety and the life of the community." Military and industrial conscription as well as criminalization of striking were prohibited within the legislation.

The transposition of the phrase 'essentials of life' into emergency powers legislation provided a specific condition upon which a declaration of a state of emergency could be requested. More importantly it provided Government the means to distinguish their interventions into industrial disputes from strike-breaking, as Winston Churchill emphasized in an address to the House of Commons in 1919...

"To use soldiers or sailors, kept up at the general expense of the taxpayer, to take sides with the employer in an ordinary trade dispute . . . would be a monstrous invasion of the liberty of the subject, and . . . would be a very unfair, if not an illegal, order to give to the soldier. But the case is different where vital services affecting the health, life or safety of large cities or great concentrations of people are concerned." (quoted in Whelan, 1979: 222)

The legitimacy of the government to intervene in industrial disputes would be preserved in recognition of the responsibility of liberal governance to protect 'life'. The government could claim that its intervention in industrial disputes was based on the necessity of securing the 'life of the community' rather than the support of the interests of the propertied classes. In practice, the distinction between strikebreaking and securing the 'essentials of life' was rarely so clear. In recognition of this fact, the government ensured that the STO continued to operate in secret, with its budget spread across numerous departments so as to distract attention from it and avoid exacerbating existing tensions (Jeffery and Hennessy, 1983: 29).

The 'essentials of life to the community' not only reactivated a military phrase within emergency legislation, but directly transposed those essential goods and services identified in wartime as essential to 'the life of the community' to those deemed essential during peacetime. If one compares, for instance, the list of essentials to the life of the community outlined within the Emergency Powers Act (1920) to those essential services listed in a 1919 Cabinet Memo a clear duplication is evident.[16] The self-evidence of liberal governments requirement to protect

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[16] The 1920 legislation mirrors the 1919 memo with the only exception being that the earlier requirement of maintaining 'war supplies' had been purged from peacetime legislation. The 1919 memo (Cabinet Memo, 16 December 1919, CAB/24/95) lists essential services as...

1. The transport and distribution of essential food supplies
2. The maintenance of war supplies
3. The maintenance of essential supplies of household coal
4. The maintenance of sanitary services

life, in turn, discouraged the question of what exactly was meant by life in the context of this legislation. But the notion of life to be protected and promoted by emergency legislation was clearly a particular enframing life forged within the requirements of total war. It persisted insofar as it enabled the possibility of a legitimate state of emergency within a liberal regime.

The STC continued to develop contingency plans right up until it was presented with its first major test—the 1926 General Strike. The General Strike began at midnight on May 3rd when the Trades Union Congress (TUC) ordered railway and transport workers, printers, iron and steel and building operatives to join the miners who had already stopped work after talks with the TUC and Government had failed. A Royal Proclamation was issued immediately declaring a state of emergency and schemes already prepared by the STC were swiftly put into action. The country was subdivided into 11 regions each under the control of a Civil Commissioner. To ensure the circulation of food and other essential services Volunteer Service Committees (VSOs) were set up to replace striking workers which were quickly filled by the unemployed (O'Brien, 1955: 29). Police, supported by volunteer organizations, would maintain order, with troops held back unless desperately needed, although they would be used to escort lorries across picket lines (Geary, 1985: 57). The swift

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5. The provision of a minimum of lighting

6. The maintenance of transport and communication necessary for those purposes and for the working of government itself

7. The protection of all engaged in the above Services

This list can be compared with the essential services listed in the Emergency Powers Act (1920):

"(1) If at any time it appears to His Majesty that any action has been taken or is immediately threatened by any persons or body of persons of such a nature and on so extensive a scale as to be calculated, by interfering with the supply and distribution of food, water, fuel, or light, or with the means of locomotion, to deprive the community, or any substantial portion of the community, of the essentials of life, His Majesty may, by proclamation (hereinafter referred to as a proclamation of emergency), declare that a state of emergency exists." (as cited in Jeffery & Hennessy, 1983, pp. 270)

action by Government was enough to deflate the unions and the General Strike was called off

a mere 8 days after it had begun (O'Brien, 1955: 29).

Panic and the Origins of British Civil Defence

While the 1926 General Strike proved the first major test of the civil contingencies

machinery, it was not solely civil contingencies personnel who were to benefit from the

lessons learned. The recently established Air Raids Precautions (ARP) Committee took great

interest in the efficiency with which the Government responded to the 1926 Strike. The ARP

was established in 1924 as a committee within the Home Office in light of the devastation

wrought by German air attacks to London, and surrounding areas, in the latter years of the

First World War (O'Brien, 1955: 7). In 1921, service experts were asked by the Committee of

Imperial Defence to report on the consequences of possible future air attacks in UK (O'Brien,

1955: 12). The report that followed detailed the rapidly escalating devastation threatened by

bombs on London and suggested that future wars would be characterised by the superiority of

rapid offensive strikes over defensive manoeuvres. In response, during a meeting of the

Committee on the Co-ordination of Departmental Action on the Outbreak of War in

December 1923, the Air Ministry suggested to the Home Office the development of a scheme

of air raid precaution. A subcommittee was established shortly thereafter charged with

calculating the extent of danger threatened by an aerial assault on London and making

recommendations in response. The first report of the ARP Committee placed great emphasis

on London. It was recognized that London 'might be taken as representing approximately

one-third of the belligerent strength of the nation' (O'Brien, 1955: 22). The report was guided by two central questions: whether vital activities normally centred in London and its periphery could be moved to a less exposed part of Britain, and whether the life of the nation could be maintained if these activities in the London area should be stopped or curtailed (O'Brien, 1955: 18)? The report concluded negative on both points. As such, the idea of mass evacuation was quickly sidelined and all efforts were directed towards maintaining its vital functions in the midst of an attack.

The fear was effectively one of panic: a sudden air strike was sure to drive the population into a hysterical panic. Chaos would erupt as city-dwellers fled for the countryside. This raised the question of whether the danger associated with informing the public of a potential attack outweighed the potential costs attributed to widespread panic and desertion. With no clear evidence to base their judgement upon, the Committee recommended information only be circulated to police, fire fighters and other specialist bodies until the question of public reaction was further investigated. The report concluded with the following reminder: "It has been borne upon us that in the next war it may well be that nation, whose people can endure aerial bombardment the longer and with the greater stoicism, will ultimately prove victorious" (as cited in O'Brien, 1955: 19).

In 1926 the ARP Committee reconvened but only to find that it could not proceed without first addressing two essential questions: "Would London's essential workers need to be prevented from leaving the capital? And if so, what form of control should be adopted for this and other purposes?" (O'Brien, 1955: 28) The experience of the First World War had already proven the tendency for air-attacks to cause work stoppages as it was not uncommon during this period for workers to refuse to enter factories until they had been given definite

promises of early warning of the approach of aircraft. O'Brien points out how this was illuminated by the Government's response to the General Strike May 1926 which impressed the newly appointed Air Raids Commandant Major-General H.L. Pritchard (O'Brien, 1955: 29, 117). The appointment of Pritchard reflected the fact that the problem was still being viewed in military terms. An attack would transform London into a battlefield, chaos and panic would ensue requiring the exercise of discipline and control to maintain order.

For Major-General Pritchard the problem of keeping people on the job was essentially one of morale. This view was echoed in the Fisher-Hankey proposals to the committee in late 1937 which suggested that 'civil defence', a term which emerged at this time to reflect all the civil departments including law and order, food, and transport that would be potentially disrupted in the event of an attack, be re-organized according to the regional structure of the STO (O'Brien, 1955: 117). It was proposed that the Minister of the Home Secretary be made responsible for both the protection of civilians (what had until then been referred to as 'passive defence') as well as the functioning of all essential services. At the outbreak of war, Britain would be divided into the eleven regions set out by the STO, each under the control of a Regional Commissioner responsible for maintaining order and the provision of all essential services as outlined in 'Civil Defence Emergency Scheme "Y"'. This schema for control formed the basis for the Regional Seats of Governance (RSGs)—a scheme for the preservation of government, and thus order, in the event of central government no longer being able to effectively perform their duties.

The ARP's adoption of the organizational framework of the STO, including the subdivision of Britain into regional structures of governance, today appears odd. Indeed why would Britain's first Civil Defence organization model itself upon a strike breaking

organization? However, a common matrix of governmentality was appropriate insofar both organizations saw their principle responsibility as the disciplining of erratic and potentially dangerous emotions. The conflation of 'panic' and 'mob mentality' can be traced back to Gustave Le Bon's study of 'the popular mind' entitled, *The Crowd* (1896), whose influence on pioneering sociological studies of panic in the 1930s was formidable (Orr, 2006). The contagion model of mob behaviour outlined by Le Bon would continue to inform scholarship on panic as well as the logics of Civil Defence well into the 1950's (see for example Milwuakee Civil Defense and Disaster Committee, 1951, Meerloo, 1950). It explained the spread of irrational and often violent behaviour within 'mobs' through the trope of mental contagion spread by the power of suggestion. Whereas Le Bon's emphasis on suggestion resonated with popular contemporary psychological studies on hypnotic suggestion and hysteria conducted by Freud and Charcot at the turn of the century the idea of moral contagion has a much longer history.

Scholarly accounts trace the idea of moral contagions to the eighteenth century when it was thought that minute 'corpuscles,' perspired though pores in the skin and contained within the atmosphere around bodies, were capable of transmitting physical and moral qualities when absorbed through the skin of another (Forth, 2001, Heath, 2010). By the late nineteenth century, the porous body of the Enlightenment was to be superseded by a more or less sealed 'biomedical body', following the work of Louis Pasteur amongst others (Forth, 2001, Heath, 2010). However the trope continued to operate as both metaphor and model in understandings of the transmission of psychological states between persons, no doubt assisted by the European fascination with epidemics which continued for many years following the great cholera epidemic of 1832 (Hacking, 1991, Pelling, 2001). The tendency to view a wide

range of problems, from fairly benign acts such as yawning to criminal acts including madness, rioting and murder as the result of 'moral' or 'mental' contagions was common in the nineteenth century and were allied to fears of 'degeneration' accompanying industrialisation (Forth, 2001).

The power of panic lies in its ability to awaken the primitive instinct lying dormant within the individual, which can powerfully erupt given the catalyst of fear. Rationality and morality give way to an instinctual, pre-social mode of behaviour befitting a child (dependent, selfish, emotional) or animal (irrational, competitive, violent). The individual becomes divorced from their sense of self, sinking in a quasi-hypnotic trance into the homogenous 'group mind'. This disassociation from the self, renders the individual incapable of self-government (in direct opposition to the objectives of the litany of moral reform programmes which abounded in the early twentieth century) and vulnerable to the will of a powerful and charismatic leader. Those most susceptible to contagion were those of weak character: the mentally ill, colonials, primitives, children and women. Forth (2001) noted that concern with the effeminizing effects of modernization, at the turn of twentieth century in France, contributed to a 'cultural obsession' with the fortification of the 'manly will' through various educational programmes and techniques of the self. O'Malley (2010b) documents similar concerns within British military discourses following the First World War which understood victims of shell-shock to be lacking in the militaristic virtue of fortitude which was acquired by some early in life. The concern with fortitude suggests that security against moral contagions was strategized through a logic of prophylaxis which required the 'steeling' of the body. As Heath noted, "The problem posed by moral contagion was thus one of boundaries –

between the mind and the body, the inside and the outside, and the self and the other" (2010: 36).

Operational Research and the 'Scientification' of War

The formation of the ARP reflected a growing recognition of the potential devastation of airpower and its implications for the conduct of future wars. By 1921, the Committee of Imperial Defence had recognized that the defensive wars of attrition which characterized the First World War were swiftly being replaced by offensive wars led by airpower. By the 1930's this shift in military advantage was actively being strategized by military theorists, including Giulio Douhet, Hugh Trenchard and Basil Liddell-Hart within doctrines of strategic bombing. It was recognized that these advances in airpower had significant implications for British defence which could no longer rely on naval supremacy alone.

In 1934 H.E. Wimperis, Director of Scientific Research in the Air Ministry, recommended the creation of a Committee for the Scientific Study of Air Defence to "consider how recent advances in technical knowledge can be used to strengthen the present methods of defence against hostile aircraft" (as quoted in McCloskey, 1987a: 144). By 1935, a scientific advisory panel, led by Henry Tizard, was appealing to the Air Ministry for the development of radar system to provide advanced warning of bomber attacks from the continent. Within two years, early-warning 'Chain Home' radar stations were being erected along the East Coast to collect and process data to be sent to the Royal Air Force (RAF) (Rau,

2005: 156). Engineers operating on these systems would refer to their work as 'Operational Research' (OR) (Rau, 2005: 156).

The definition of Operational Research has been a matter of considerable debate, no doubt exacerbated by the disparity of practices, techniques and applications encompassed under this label (Mirowski, 2002: 177-81). The journal of the British Operational Research Society *Operational Research Quarterly* has defined Operational Research as

> The application of the method of science to complex problems arising in the direction and management of large systems of men, machines, materials, and money in industry, business and defence. The distinctive approach is to develop a scientific model of the system incorporating measurements of factors such as chance and risk, with which to predict and compare the outcome of alternative decisions, strategies or controls. The purpose is to help management determine its policy and actions scientifically (as quoted in Kirby, 2003: 3).

As a practice, Operational Research is thus characterized by the application of quantitative methods of analysis to the operations of systems for the purposes of managing uncertainty. The extent to which such an approach can be properly understood as 'scientific' however deserves further discussion. Scientists recruited primarily from physics and the natural sciences were certainly instrumental in their early formation of Operational Research and their status as scientists, as well as their claims to a 'scientific approach', no doubt garnered especial authority to their work. However, the scientific status afforded to Operational Research is by no means obvious.   Indeed, despite the attempts of its proponents to ally OR with hard sciences like Physics, the discursive structure of Operational Research unmistakably resembles most closely the 'soft' social science of Economics (Mirowski, 1989, 1999, 2002).

The scientific status afforded to Operational Research might be better understood in relation to concurrent trends in the scientification of economics at this time (for a discussion see chapter 3). A 'scientific' approach to economics was embraced by many left-wing intellectuals in Britain in the years leading up to the Second World War. Building on the success of Taylorist techniques of 'scientific management' in industry and the experience of the command economy instituted in the First World War left-wing intellectuals in Britain campaigned for the 'scientific' rational-planning of the economy. In 1940, *Science in War* was published by figures instrumental to the development of wartime OR in years to follow, including Patrick Blackett, J.D. Bernal and Solly Zuckerman. The authors were associated with the Tots and Quots dining club, organized by Zuckerman, which met to discuss the social responsibility of science in the early years of the war (Kirby, 2003: 88). The book criticized the overrepresentation of those with a background in the classics and literature amongst the ruling classes and demanded a greater proportion of scientists be elevated to high ranking positions. The application of scientific method was an underutilized technique, according to the authors, which could be used not only to assist in problems of military tactics and strategy but also to the administration of the war economy. The political sensibilities of these individuals did not go unnoticed, prompting the formation of the "Society for the Freedom of Science" whose members included Arthur Tansley and Fredrich von Hayek (Mirowski, 2002: 183).

Military historians have documented the rapid spread of Operational Relations through the separate divisions of the military (see Christopherson and Baughan, 1992, Harvey and Delfabbro, 2004, Kirby, 2003, McCloskey, 1987a, 1987b, Rau, 2005) colonizing the last of the major military commands in September 1941 with the establishment of a bomber

command group set up to investigate losses and bombing accuracy (McCloskey, 1987a: 149). Operational Research was also applied to Civil Defence considerations. The Civil Defence and Research Committee was established in May 1939 to assist the Home Office Research and Experiments Branch in its studies of the effects of high explosives (McCloskey, 1987b: 466). J.D. Bernal set up a Design and Development Section within the Research and Experiments Branch to begin collecting information on structural damage to buildings in the wake of an explosion, initially with an emphasis on industry. The section, which included Baker and Zuckerman, would continue to develop analytical tools designed to predict the effects of German bombs on British cities. It was quickly realized however that the same techniques used to analyze the impact of German bombing attacks on UK cities could be used to measure the effectiveness of allied bombing campaigns on the continent and the section was absorbed into the Air Ministry. (McCloskey, 1987b: 466).

The growing influence afforded to 'scientists' not simply to provide information, but to actively influence questions of tactics and strategy was neither unnoticed nor uncontested by the existing military command. A large proportion of the military establishment was quick to condemn the 'scientific' approach advanced by practitioners of Operational Research as overly technocratic and myopic (Rau, 2005). This conflict was to come to a head in 1941 when Churchill's scientific advisor, Fredrick Lindemann, sponsored the highly critical Butt Report on the navigational and bombing accuracy of the RAF Bomber Command. An ORS was formed by Chief Air Marshal of Bomber Command Richard Peirse, however this was not enough to keep his job, and he was replaced shortly thereafter by Arthur 'Bomber' Harris, an advocate of area bombing. The high casualty rates suffered in 1941 by bombers in air campaigns over Germany had encouraged the shift to mostly night time raids which, in turn,

led to a significant drop in the bombing accuracy of industrial and military targets. Consequently, the Air Staff began to encourage the practice of area bombing as part of a strategic bombing campaign in which key population centres and industrial targets were targeted with the express purposes of undermining the capacity for the nation to endure war (Rau, 2005: 159).

By January 1944 Zuckerman had been appointed as a second Scientific Advisor to the Air Officer Commanding Officer in recognition of his work on the impact of air attacks on lines of communication. Zuckerman's work suggested a radical reorientation of pre-invasion bombing strategy from concentrating on German population centres and industrial capacity, to targeting infrastructural supply lines to disrupt the circulation of military and industrial products (McCloskey, 1987b: 462)—what would later be termed 'critical infrastructures' (Collier and Lakoff, 2008a, 2008b). Operational Research was applied in an effort to ascertain the most vulnerable elements of these systems to attack, measured in terms of the effect of their loss in disrupting the enemy's war effort. Contingency was a calculable feature immanent to system design.

The knowledge of the military command, formed through instinct and experience, was being undermined by 'scientific' approaches to war, rooted in quantification and statistics. Underlying this transition was a transformation in the rendering of contingency itself. As concerns shifted from the unpredictability of irrational human emotions to the architecture of critical infrastructure systems, so did the imaginary of the nature of contingency itself. Contingency was not longer an irreducible element of the fog of war, but something which could be rendered calculable and scientifically managed. The scientification of war was premised on the emergence of a new regime of truth in relation to which 'scientists' were

afforded authority on matters concerning the prosecution of war. Mirroring this shift in war, British contingency planning would soon thereafter re-focus its planning operations from calculating the number of bodies required to replace striking workers to quantitatively assessing the vulnerability of systems to targeted disruption.

Generalizing Emergency: The Emergencies Committee

Industrial relations over the course of the Second World War were relatively peaceful. Though more strikes occurred than during the First World War, those occurring during the Second generally involved fewer workers and extended for shorter durations (Jeffery and Hennessy, 1983: 145). Provisions for compulsory arbitration and the incorporation of trade unions and employers' associations into wartime governance ensured that Defence (Armed Forces) Regulation 6 of 1939 Emergency Powers (Defence) Act[17] was rarely used. By contrast, the memory of the difficult transitionary period following the First World War encouraged the wartime coalition government headed by Churchill to review civil emergency mechanisms immediately upon the end of the war in Europe, which included Home Office plans to secretly reconstitute the STO (Jeffery and Hennessy, 1983: 147-9).

The decision to revive the STO would not be reversed by the election of the first majority Labour Government in July 1945. Whilst vocally committed to the repeal of the Trade Disputes and Trade Unions Act (1927) which made general strikes illegal the Attlee

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[17] The 1939 Emergency Powers (Defence) Act permitted service men to be used to break strikes which risked 'the maintenance of the supplies and services essential to the life of the community'' (cited in Jeffery and Hennessy, 1983: 143-4).

government decided to extend emergency powers for a further five years in anticipation of potential crisis such as those that occurred in 1921, 1924 and 1926. By October 1945 Cabinet authorized troops to break a strike involving dock-workers in Liverpool. The experience provoked the establishment of the 'Industrial Emergencies Committee'—a Cabinet committee chaired by the Chancellor of the Exchequer to review existing civil contingencies controls—whose first meeting would be delayed until January 1947 as a result of the end of the dock-workers strike. In the meantime, the secret review of the STO proceeded within the Home Office under Home Secretary James Chuter Ede.

In particular, questions were raised concerning whether the existence of the organization should be made public. It was recognized that the disclosure of the STO by the Parliamentary opposition, who were well aware of the existence of the organization, to derail Government efforts to repeal the Trade Disputes and Trade Unions Acts risked significant embarrassment for a Labour Government. Ede, for one, suggested that an the STO be announced and explained as a 'routine precaution' whose scope was limited to the maintenance of emergency supplies and services, noting that full public disclosure of the organization would serve to facilitate the preparation of plans as well as their function during an actual emergency (Jeffery and Hennessy, 1983: 163). Atlee however, remained unconvinced, and a decision to disclose the organization was delayed indefinitely.

This impasse would only be resolved in 1947. Following the Industrial Emergencies Committee's first meeting in the face of a road haulage strike, Ede proposed that the purview of the Committee be widened so as to include not just industrial action, but any threat to the disruption of essential services (Jeffery and Hennessy, 1983: 177-8). The IEC looked favourably on Ede's proposals as a way of combating the perception that the organisation

existed as a strike-breaking mechanism. It decided to act quickly, noting that the memory of troop assistance in the delivery of coal to power stations during the fuel shortages which exacerbated the previous winter's exceptional cold was still fresh in public minds. The IEC was strategically reconstituted simply as the 'Emergencies Committee' whose function was "to supervise the preparation of plans for providing and maintaining in any emergency supplies and services essential to the life of the community; and in any emergency to co-ordinate action for this purpose" (Jeffery and Hennessy, 1983: 179-80). As such, the STO was essentially resurrected under a new name and with the more politically acceptable mandate of responding to emergencies in general.

While the establishment of the Emergencies Organization never was fully disclosed to the public, it did provide the impetus to open consultations with essential industries for the development of detailed emergency plans which progressed steadily over the next decade. Emergency organization was further assisted by the Supplies and Services (Defence Purposes) Act 1951 which extended emergency powers due to expire in 1950 including Regulation 6. Though presented as a temporary measure, these powers would persist until they made permanent in the Emergency Powers Act 1964. Following the severe winter of 1962-3, the government of Sir Alec Douglas-Home amended the 1920 Emergency Powers Act, and made permanent Regulation 6, to facilitate the use of troops in dealing with natural disasters. It did so by substituting the condition upon which a government may request a state of emergency from a determination that 'any action has been taken or is immediately threatened by any persons or body of persons' so as to threaten the essentials of life, to the more general condition that 'there have occurred, are about to occur, *events* of such a nature" which threatened the essentials of life (See Appendix I Jeffery and Hennessy, 1983: 270-273).

The reframing of the civil contingencies apparatus as a machinery for dealing with general emergencies was thus a political strategy designed to legitimate an organization principally resurrected for strike-breaking purposes. From 1964 when the act first appeared until it was replaced in 2004 by the Civil Contingencies Act it has only been invoked to deal with industrial disruption. While the contingency plans of the Emergencies Organization would advance markedly from consultation with essential industries during this time, the role of the organization changed little from its initial formulation. As with the inter-war STO, the Emergencies Organization was taken to be an essential instrument for dealing with the threat of Communist subversion and the threat it posed to order and good governance.

States of Emergency: the Civil Contingencies Unit

By the late 1960s low economic growth paired with rising unemployment and high levels of inflation was contributing to a crisis of economic governance. 'Stagflation' was difficult to reconcile with predominant Keynesian economic paradigms (Gamble, 2009: 59-64, Hay, 2010, Olson, 1982a, 1982b) where inflation and unemployment were understood as mutually exclusive and counterpoised against one another: deflation was the solution to high inflation, and reflation through policies of demand-management the solution to rising unemployment. Stagflation required solutions which would break this inflationary cycle and prevent rises in prices from being transmitted into demands for higher wages (Hay, 2010). Incomes policies would, however, pass the responsibility and cost of managing inflationary pressures onto labour. In 1970, Edward Heath's Conservative government was elected on the

promise of enacting strict anti-inflationary policies within the public sector. In doing so Heath was preparing to take on some of the largest trade unions in Britain, including powerful energy sector unions.

In July, only one month after the election, a strike by dockers led Heath to declare a state of emergency, swiftly followed by a second declaration in December in response to a 'go-slow' in the electricity sector. The second incident in particular demonstrated the extent to which the plans of the Emergency Organization had become outdated (Jeffery and Hennessy, 1983). Whereas only two states of emergency were called between 1950 and 1970, technological advances during this period, within essential industries in particular, made it increasingly difficult to substitute troops for highly skilled, specialized labour (Jeffery and Hennessy, 1983: 233). The lack of exercise left the machinery in ill-position to deal with the crises which would erupt in swift succession from 1970. Five 'states of emergency' were declared between 1970-4 by the Conservative government led by Edward Heath, giving salience to media accounts that Britain had become an ungovernable state (Hay, 2010).

On January 9th 1972, after having rejected a small pay rise from the National Coal Board, the National Union of Coal Miner's encouraged their members to come out on strike—the first national coal strike since 1926. The government waited for an entire month to declare a state of emergency on 9 February, despite coal already having been run down by the overtime ban conducted prior to the strike (Jeffery and Hennessy, 1983). Miners began by setting pickets at coal stations, however their strategy quickly escalated to encompass all power stations, as well as steelworks, ports, coal depots and coke depots as well. These key points of energy vulnerability—what would later be termed critical infrastructures—were targeted using secondary and flying pickets, permitting strikers to effectively disrupt the

power supply of the entire nation. Fuel shortages, especially for power stations, slowed the country to a halt as industry was restricted to a two-day week (Jeffery and Hennessy, 1983). The result was overwhelmingly effective. Even with the declaration of a state of emergency and the use of force (Geary, 1985) by 25th of February a deal was reached which significantly augmented miner's wages.

The rhetoric of war was used by many, including President of the NUM Arthur Scargill. But the tactics of the flying picket, which specifically targeted critical infrastructures associated with energy, demonstrated an affiliation with doctrines of strategic bombing:

> "You see, we took the view that we were in a class war. We were not playing cricket on the village green, like they did in '26. We were out to defeat Heath and Heath's policies because we were fighting a government. Anyone who thinks otherwise was living in cloud-cuckoo land. We had to declare *war* on them and the only way you could declare war was to attack the vulnerable points. They were the points of *energy*: the power stations, the coke depots, the coal depots, the points of supply. And this is what we did." (Arthur Scargill as quoted in Jeffery and Hennessy, 1983: 235-6)

The view in Whitehall was that government response to strike was wholly inadequate and a major review of emergency planning protocol, led by Lord Jellicoe and John Hunt, was ordered by Heath to investigate the Emergency Organisation's handling of miner's strike (Jeffery and Hennessy, 1983: 236-237). The review precipitated a significant overhaul of the civil contingencies apparatus at the level of both its organization and underlying logics. The Emergency Organization was replaced with the Civil Contingencies Unit, a streamlined organization no longer located within the Home Office, but in the Cabinet Office. The new organization was mandated to create contingency plans based on the coordination of the

police, military and civil service for a wide range of peacetime emergencies reflected in the notion of 'emergency services.'

The notion of emergency services would dissolve the division between internal and external threats which had been preformed within the separate establishment of the STO and ARP in the interwar years. Wartime emergencies, peacetime emergencies and natural disasters were, for the first time, to be responded to by the same organization. The distinction between internal and external threats was further distorted within the notion of 'home defence' promoted in the 1973 Home Defence Planning Assumptions which outlined the state's commitment to the protection of civilians from internal as well as external threats. The term however was quickly abandoned when it was recognized that it might imply a militaristic response, or war, on labour unions (Hilliard, 1986). Still, the militarization of emergency management was clearly evident, not least by the appointment of Brigadier R.J. 'Dick' Bishop directly from the Army to Secretary of the CCU in 1972—a position he was to keep until his death in 1981. One of Bishop's first tasks was to rank in order of vulnerability to industrial action the essential services and industries of Britain (Jeffery and Hennessy, 1983: 238). Sixteen industries were appraised according to their importance to the functioning of the nation and their susceptibility to disruption. Electricity supply, unsurprisingly, topped the list. Contingency plans were revised to ensure the maintenance of essential supplies and services in the wake of industrial action and an intelligence unit was established within Scotland Yard (Geary, 1985: 95). If this was war, as Scargill claimed, then it was so as the level of tactics employed by both labour and the state. The targeting of critical infrastructures represented a transposition of strategic bombing tactics into the battles unfolding within the domestic sphere.

Conclusion:

For Clausewitz, uncertainty was an inexhaustible element of war (Clausewitz, 1997: 52). It was that which frustrated any effort to render war a calculative science (see 1997: 86, 136). Clausewitz denounced the hubris of contemporaries who, in seeking to reduce war to neat mathematical formula, only served to degrade the virtues needed to prosecute war *within* conditions of uncertainty (1997:158-162). Uncertainty could not be overcome but instead demanded the exercise of creativity and heroism on the part of the military commander. For it was only in overcoming his own insecurity and learning to make decisions on the basis of incomplete knowledge that the commander could learn to prosecute war within conditions of ineradicable uncertainty, and thus turn contingency to his own martial advantage. Operating within uncertainty required discipline: a technique of governance which was concerned less with taming the dangerous passions which were a primary source of the uncertainty of battle than in gaining mastery over these forces by learning to augment, channel and harness them to the martial ends determined by the commander. Importantly, this program of military governance was supported by a romantic conception of contingency. If contingency was an opportunity for creativity and heroism for Clausewitz this was because uncertainty was a condition of possibility for freedom itself.

This order of military governance, which was slowly displaced by the 'scientification' of civil contingencies management, is important not just because of its influence in the design of Britain's first formalised machinery of emergency governance, but because it resonates with, and sheds some light on, contemporary resilience discourses. While the legacy of the

'scientific revolution' to contingency management is still evident within contemporary approaches to civil contingencies management in the UK (for example in the widespread use of risk registers: a tool used for planning and funding purposes and a legal requirement for councils (Cabinet Office, 2008, 2009a, 2010a, for a discussion see Hagmann and Dunn Cavelty, 2012)) these 'scientific' approaches to the management of uncertainty are currently being challenged. Like the romantic view outlined above, resilience discourses understand contingency to be an irreducible element of life which resist, in important ways, strict calculative approaches to management. While the source of contingency has shifted, from the irrationality of human emotions to the dynamics of complex systems, resilience discourses often portray contingency management within heroic terms, as cultivating the virtues required to live with, and even embrace (Baker and Simon, 2002), uncertainty. In moving ahead it may be useful to bear in mind the affiliation of resilience discourses to Clausewitz's romantic account of military governance: extending the obligation to creatively engage with uncertainty to all facets of the population (see especially chapter 5).

This chapter provides a foundation for the genealogical analysis continued in subsequent chapters. Firstly, it shows the biopolitical imperative of British emergency governance since its formalized institution. The biopolitical enframing of British emergency governance is traced to concerns regarding the security of the 'essentials of life' within the context of the forms of total war which characterized the First World War. This commitment to ensuring the continued circulation of the 'essentials of life' was carried into the inter-war years via Emergency Powers legislation where it operated as a condition legitimizing liberal intervention in industrial disputes which had become the primary concern of the state. Though secret, this legislation was accompanied by a machinery of emergency governance

mandated to plan a response to major industrial disputes. To the extent that they were commonly focused on the problematic of panic, this biopolitical machinery of governance would provide an organizational schema adopted by British Civil Defence.

Secondly, this chapter documented the emergence of a 'scientific' order of governance within the field of UK civil contingencies management. It traced the origins of this order to the advent Operational Research during the Second World War which challenged the authority of military commanders in the strategisation of war. While the struggle concerned itself with the best means for governing uncertainty, it was evident that what was at stake was authority over the nature of contingency itself. Distinct orders of governance operated in relation to very different imaginaries of the nature of uncertainty. With Operational Research uncertainty was transformed through the application of statistical devices into risk: a particular way of sculpting uncertainty to make it calculable and actionable (Ewald, 1991, Lobo-Guerrero, 2010, O'Malley, 2004). Contingency, rendered as risk, became a product of system design which could be calculated by specialists. Risk permitted governance to be technologized, replacing the freedom to make decisions on experience and intuition enjoyed by military commanders with formulas and models determining the optimal course of action. The shift in authority was thus premised on the advent of a new regime of truth within which contingency was understood as calculable and amenable to scientific management. But it also alluded to a novel problematisation of life. Governmental concern shifted from disciplining the irrational and potentially destabilizing emotions of those of weaker dispositions, to the vulnerability of vital systems enabling life. These rival orders of governance, insofar as they operated in relation to different imaginaries of uncertainty, enacted particular speciations of life.

By establishing the biopolitical imperative of British emergency management and elucidating the origins of the scientific order of governance which predominated contingency management in the years following the Second World War, this chapter provides a foundation for subsequent chapters tracing the constitution of a neoliberal order underpinning contemporary resilience strategies. The following chapter focuses on the problematisation of 'scientific' approaches to contingencies management in the context of Cold War Civil Defence and the advent of techniques though which contemporary resilience discourses would germinate.

Chapter 2

Protect or Survive

To a nation still very much steeped in war, the promise of a stable post-war period financed through the peace dividend provided comfort, solace and hope. Less than a month after the last major raid of the London Blitz, which had devastatingly displayed modern life's total exposure to modern total war, an interdepartmental committee, chaired by William Beveridge, commenced planning for an ambitious scheme for post-war social security. *Social Insurance and Allied Services*—popularly known as the Beveridge Report—was presented to Parliament in 1942. No doubt strongly influenced by the spectre of the Great Depression, the report spoke powerfully to the forms of civil contingency expected to greet post-war administrations. It advocated compulsory social insurance, social housing, public education, a national health service and a commitment to full employment, all funded through the 'peace dividend', as a means of combating the five 'giant evils' of want, squalor, ignorance, disease and idleness in post-war Britain. The document would be widely recognized as the cornerstone for what would emerge, post-war, as an ambitious state programme for the management of civil contingencies: the British welfare state.

The Welfare State was itself a quite disparate regime of practices, techniques and institutions located across both public and private sectors (Rose, 1993). However disparate, the various mechanisms which comprised this assemblage—which included, but was not limited to a programme of compulsory social insurance, demand-led interventionist Keynesian economic policies and the maintenance of a 'national minimum' of state protection through welfare programmes—operated in pursuit of the common aim of social stability. Social stability was to be ensured through twin interventions aimed at the reinforcement of the social bonds of the nation and the elimination of threats which might weaken them. Social insurance emerged as the quintessential technology of the welfare state insofar as it addressed both these concerns simultaneously. Operating a policy of risk-socialization extended to every member of the nation, technologies of social insurance emerged as a way of promoting social solidarity whilst simultaneously acting to mitigate the fear of dangerous futures which posed the greatest threat to the integrity of social bonds.

Yet no sooner had the transition to a stable peace settled-in than the shape of the next battle was to begin to take form. By the 1948 Berlin blockade it was generally recognized that the much anticipated peace dividend would instead need to be reinvested into the realm of military-defence as the terms of the Cold War emerged. Though beset by persistent underfunding, a machinery of British Civil Defence was resurrected whose design echoed that of its wartime predecessor. A mix of shelters, evacuation schemes, public education campaigns and rescue services was depended upon to protect the population from the dangers of aerial bombing and ensure Britain's continued ability to conduct war. Advances in weaponry, including the development of atomic, and later thermonuclear weaponry would, however, raise questions as to the sufficiency of these measures. As the hostilities of the Cold

War mounted, the British nation would be exposed to unprecedented levels of danger which ultimately risked the continued existence of the nation itself.

The concurrent operation of these two great machineries of security has been difficult to reconcile within a common historical account of the post-war period given the very different meanings commonly associated with the historical realisation of each of these machineries. Historical narratives of these two machineries regularly appeal, explicitly or implicitly, to diametrically opposed teleologies of the evolution of the modern liberal state. On the one hand, the welfare state is taken to represent the culmination of a long project associated with the humanization of the State in which logics of *raison d'état* have been marginalized and state interests aligned with those of the nation to which it serves. Cold War Civil Defence, on the other hand, invokes a more sinister narrative of the historical trajectory of the modern state: Advances in weaponry paired with a conviction of their necessity, raised the stakes of war so as to wager the existence of whole nations while persistently underfunded Civil Defence programmes acted as a charade to placate an anxious nation and keep it from turning against the official policy of deterrence.

But what if these projects were not so dissimilar? Rather than treating the co-existence of these two great machineries of governance as either coincidental or ironic, this chapter aims to study the logic of these two albeit distinct machineries of security as emergent from a common matrix of governmentality. In doing so, this chapter draws inspiration from Foucault's suggestion in The Will to Knowledge (1978) that an indissociable relation exists between state biopolitics, aimed at the protection and promotion of the species-life of the nation, and the emergence of a thanatopolitical geopolitics wagering the continued existence

of the nation as species.[18] It does so by focusing on a common problematic of anxiety shared by Civil Defence and the Welfare State and, more specifically, the dangers it posed if permitted to amplify to a state of panic for social stability.

To do so is not, of course, to reduce these two distinct machineries of governance to the same. Clearly, tensions also existed between these machineries at the level of the underlying security rationalities which they performed. And it is here, in the field of resonance and dissonance which existed between the security logics enacted by these allied machineries, that this chapter locates the emergence of a novel approach to the government of anxiety. Departing from the overall project of fear-mitigation around which early Civil Defence and the Welfare State were commonly organized, a rationality of security governance emerged within Civil Defence following its massive reorganization in the wake of the development of thermonuclear weaponry which did not seek to quell fears, but to mobilize anxieties within a project of preparedness. Eclipsing a security project rooted in the manufacture of a stoic citizenry, governmental techniques would increasingly aim at the production of subjects acclimatised to dangerous worlds, confident in their ability to overcome the risks they faced—even if those included thermonuclear war.

This chapter is interested in excavating the conditions of possibility for the emergence of new security values. It demonstrates the emergence of new security values by focusing on the correlated transformations taking place between political imaginaries of the ideal subject of security and the governmental programmes which seek to elicit these subjects. The transformation is studied by tracing a line of flight (Deleuze, 1992) between these distinct

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[18] For Foucault, "what might be called a society's "threshold of modernity" has been reached when the life of the species is wagered on its own political strategies. For millennia, man remained what he was for Aristotle: a living animal with the additional capacity for a political existence; modern man is an animal whose politics places his existence as a living being in question." (Foucault, 1978: 143).

rationalities of governance via a study of the insurantial logics they mobilized. The place of social insurance schemes with the Welfare state is demonstrated to operate as means of quelling anxieties through the reparational form of security it performed (Lobo-Guerrero, 2011). By doing so, social insurance operated within a common matrix of governmentality underpinning Civil Defence, rooted in a particular problematisation of species-life as precarious and panic prone. The chapter continues by showing how these 'protectionist logics' of security became problematised with the advent of thermonuclear weaponry. Drawing on earlier discussion of the insurantial security, this study shows how Civil Defence logics were reconfigured in accordance with the reparational logic of insurance technologies: focusing on the security of a 'way of life' rather than the material body, and eliciting subjects 'free' to operate in dangerous and uncertain worlds.

To the extent that a similar, albeit perhaps more refined project of preparedness is still evident within contemporary resilience discourses, the emergence of a governmentality of preparedness marks an important event in the genealogy of resilience.

Establishing Stability and Eradicating Fear in the Welfare State:

The end of the Second World War was greeted with enormous optimism. While much of Britain lay devastated—its major cities in tatters, its economy fragile—an ambitious programme designed to ensure freedom from the various evils which plagued British society prior to the war was being constructed. A range of emotions, from post-war optimism to the fear of relapse into depression, acted as an adhesive for the combination of a disparate range

policies, practices and institutions which would be collectively known as the British welfare state. Of these various programs social insurance has been widely recognized as the principal technology of the form of social liberalism enacted by the welfare state (Beck, 1992, Dean, 1999, Defert, 1991, Ewald, 1986, O'Malley, 2004, Rose, 1996a).

Ewald (1991) describes insurance as an abstract technology which operates in relation to a calculative rationality of risk. Importantly, Ewald investigated risk, not as an objective condition (Cf. Beck, 1992), but as a particular way of sculpting uncertainty (see Ewald, 1986). As Mitchell Dean notes "[i]t is a way of representing events in a certain form so they might be made governable in particular ways, with particular techniques and for particular goals" (1999: 177). The spread of insurance is dependent upon the ability of insurers to actualize this abstract technology in innovative ways in order to render insurable, and thus profitable, what had not been previously thought insurable (Ewald, 1991). The spread of insurance, as a technology, is therefore dependent on the 'production' (Dean, 1999) and 'proliferation' (Defert, 1991) of risks—that is, the rendering of risk(s) through actuarial techniques in new fields. Actuarial data renders risk by recording the regularity of past occurrences of an event and then extrapolating these figures into the future in the form of probabilities. The specific temporality upon which insurance technologies operate is therefore a conservative one in which the future is posited as an extension of continued past-presents. History takes on a privileged place, as a repository of information which, when allied to the scientific tools of statistics and probability, can be drawn upon to tame the potential dangerousness of the future. However, as the recent development of catastrophe bonds demonstrate, the profit-motive may in practice extend insurance technologies to fields in which little, or insufficient, actuarial data

exists (Bougen, 2004).[19]

Genealogies of insurance have demonstrated how the development of probability and the statistical sciences permitted the extension of technologies of insurance (Daston, 1988, Hacking, 1990, 2006, Lobo-Guerrero, 2011). From the late eighteenth century, the application of these sciences to the 'avalanche' of information generated from institutions including workhouses, prisons and hospitals was instrumental in giving the sense that regularities existed in the appearance of events associated with social problems such as reproduction, disease and mortality (Foucault, 2003, 2007, Hacking, 1982, 1990, 1991). Statistical normalization, represented by the 'bell-curve', would be introduced as a means of representing, standardizing and regulating future contingencies. By the late nineteenth century, contingencies such as accidents, illness, unemployment and even death were increasingly seen as properties of statistical distribution rather than negligence (Hacking, 1990). In turn, 'the social', which in liberal discourses had long been conceptualized as an organic unity operating in relation to its own fundamental laws and regularities, became increasingly understood as a phenomenon displaying laws of *statistical* regularity (Foucault, 2003). Ewald (1986) has demonstrated how social insurance arose from the application of the abstract technology of insurance to this statistically-informed way of conceptualizing the social.

The advent of social insurance was not based in expectations of profit, but in the potential insurance had for reinforcing social solidarity. Insurance, according to Ewald, engenders a specific form of mutuality:

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[19] This extension renders problematic accounts of a contemporary 'risk society' (Beck, 1992, 1999) characterised by the proliferation of incalculable threats which exceed the actuarial metrics of insurance, and thus the boundaries of insurantial security.

> Insurance provides a form of association which combines a maximum of socialization with a maximum of individualization. It allows people to enjoy the advantages of association while still leaving them free to exist as individuals. It seems to reconcile those two antagonists, society-socialization and individual liberty (1991: 204).

Scholars have identified the advent of accident insurance within industries of Western European states at the turn of the nineteenth century as an important event in the genealogy of social insurance (Defert, 1991, Ewald, 1986). Ewald (1986) has noted that the success of accident insurance lay in its ability to displace the struggle between employee and employer over fault, to a struggle between employee and insurance provider over compensation for an accident, thus effectively diffusing a primary source of social and political confrontation. Daniel Defert (1991) has argued that the spread of social insurance in France can be attributed to its success in demutualizing the workers movement. The gradual takeover of workers mutual benefits societies by insurance companies removed a primary mechanism through which worker solidarity was engendered and reapplied it to the task of reinforcing the social solidarity of the nation. By the turn of the century, Durkheim (1984) was stressing the difference between mechanistic solidarity, forged through common understandings of identity in primitive societies, and organic solidarity, which resulted from the growing interdependence amongst individuals whose work had become specialized in complex societies. Social insurance was a technology which provided concrete form to the social by complimenting the organic bonds which held together advanced societies with bonds forged though technologies of mutuality.

Social insurance sought to realise a very different idea of security than that normally associated with the term. Security has traditionally been understood as a condition

characterized by the absence of threat (McSweeney, 1999: 14-15). Within the Western cannon of political theory this understandings of security has long provided a telos for security governance and justification for the existence of the state (Dillon, 1996). The understanding of security which technologies of insurance aim to realise is not defined by the absence of threat. Rather it is a form of security associated with the mitigation of one's exposure to the negative effects of a specified event (Lobo-Guerrero, 2011). Ewald is clear, that what is offered by insurance does not, and cannot, equal the loss suffered—indeed the loss of a limb, or a life, would be incalculable (1991: 204-5). Rather, what is remunerated is an amount which has been contractually agreed upon with the insurer to be paid out should a particular event materialize. As such, the 'reparational form of security' (Lobo-Guerrero, 2011: 6, 91) offered by insurance is not the guaranteed protection of the referent of security from harm, but rather a security which compensates for an event, thus mitigating the financial implications arising from its occurrence. The referent to be secured by insurance is not the material body, but one's way of life. For example, while the cost of an industrial accident to the individual is itself incalculable, insurance ensures that one need not worry that the loss of one's ability to earn a wage resulting from such an accident cascades into the bankruptcy of one's family.

In reducing the exposure of an individual to undesirable future events insurance may even augments one's confidence—a sense or *feeling* of security, rather than an objective *condition* of security—to live in an uncertain, and indeed risky, world. If the welfare state could not protect the individual from the wide spectrum of threats they faced, it could ensure that one need not *fear* the full repercussions of its consequences. From Keynesian demand-management, to the regime of welfare programs which instituted a national minimum below which no citizen would be permitted to fall, the construction of a stabilizing machinery was

being prepared to protect populations not simply from the dangers of the future, but from their *fears* of dangerous futures. If social insurance was the security mechanism *par excellence* of the welfare state then it was not just in respect of its ability to reinforce social bonds by extending the mutualising forces of insurance over the entire body of the nation, but also in its ability to mitigate fears which posed the greatest threat to the integrity of those bonds.

Insuring Against Nuclear War: Post-war Civil Defence

The atomic bombs which fell on Hiroshima and Nagasaki at the close of the Second World War left an indelible impression in the minds of post-war governors, military planners and the public alike. From the Autumn of 1945 fear and desire fed off one another. A massive government machinery for nuclear considerations, both offensive and defensive, was constructed to investigate the implications of this weaponry for British defence and advance Britain's own procurement of the weapon (Grant, 2010: 18). In January 1946, a report was circulated on British vulnerability to nuclear weaponry authored by the Joint Technical Warfare Committee (JTWC), a sub-committee of the Chiefs of Staff Committee, which would be greatly influential in shaping the official imaginary of nuclear vulnerability. *The Effects of Atomic Bombs on Hiroshima and Nagasaki* concluded that the concentration of the British population as well as her industry, transport and shipping made her much more vulnerable to attack than the relatively dispersed United States and Soviet Union. This, paired with uncertainties regarding the ability of public morale to withstand an atomic strike (Grant,

2010), raised questions concerning Britain's ability to continue to prosecute a war in the wake of a nuclear attack.

The catastrophic implications of atomic weaponry for UK defence would not, however, fundamentally change the general logic of civil defence planning. Modelled on the strike-breaking machinery of the inter-war Supply and Transport Organization (STO), Civil Defence would continue to operate under a protectionist logic principally concerned with morally disciplining irrational and dangerous behaviour in the midst of an emergency which threatened to erode morale. Over the course of the Second World War, Operational Research would be used to ameliorate, but in no significant way modify, this foundational design. Operational Research conducted within the Civil Defence and Research Committee sought to advance Civil Defence measures through the study of the implications of blast intensities on organic bodies and the built environments of the city. Research was influenced in particular by the controlled experiments of primatologist Solly Zuckerman on the direct and indirect effects of 'blast' on lab animals (Zuckerman, 1978, Zuckerman, 1941, Zuckerman, 1940). These studies would be drawn upon in subsequent years to inform Allied strategic bombing campaigns. Adey has argued that these studies "had important consequences for understanding the process of aerial bombing, scientifically perpetuating the analogic and affective amplifications of morale and panic through the trope of the explosion and the body's susceptibility to indirect environmental effects" (2010: 159). The understanding of the material and affective consequences of blast supported the bunker logic of Civil Defence in the Second World War. The prophylactic securitization of material bodies within bunkers served as a means of pursing the broader objective of protecting the collective national psyche from fear.

The Civil Defence machinery resurrected in the early days of the Cold War maintained the design of this earlier model. Focused on the allied considerations of mitigating the effects of an attack on the population and maintaining UK war-fighting capabilities, 'insurance' against a nuclear strike would be provided through a mix of evacuation plans; shelter provision; stockpiles of food, medical and industrial materials; and plans for increased port capacity and industrial dispersal. The resemblance of this new machinery to its predecessor was no doubt the product of a certain degree of path-dependency but it also attested to the extent to which nuclear weaponry could be understood within existing frameworks of intelligibility. If the advent of nuclear weaponry did not significantly problematise the bunker logic of Civil Defence this may be explained by the extent to which the threat posed by this weaponry could be conceptualized by operational researchers as 'simply' representing an amplification in blast-power: something which was already well-understood, and could be responded to by 'scaling-up' existing metrics (Smith, 2009).

If Civil Defence operated as an insurance policy it was not simply in providing a secondary line of defence. The objective of protecting a population from fear resonated with the wider biopolitical project of social stability pursued by the welfare state. Civil Defence was similarly designed for the production of stoic citizens, impervious to the fears solicited by campaigns of strategic bombing and thus unsusceptible to behaviours of panic and flight which could undermine the ability of the state to mount a retaliatory attack—citizens, in short, who could be depended upon to 'keep calm and carry on'. This stoicism required the presence, if not exercise, of authority. The front-line of the state would be represented by the steeled members of the Civil Defence Corp, comprised of respected members of the community who were capable of setting an example to the worried flock in times of crisis and

to administer disciplinary control to correct those who succumbed to their fears (see Thomas, 1942). Authority was necessary to combat the descent into irrationality and violence presumed to affect those of 'weaker' dispositions, including women, children, and ethnic minorities such as the Irish, in the midst of an emergency (O'Brien, 1955). The British state recognized its responsibility to protect and sought to fortify the population prior to the attack, materially as well as psychologically, by providing visible forms of authority to quell the population, maintain civility, and, if necessary, restore rationality in times of emergency.[20] The fortification programme of Civil Defence resonated with the aims of the welfare state. The political subject to be produced through both programmes was psychologically armoured for the event: stoic and, thus, rational.

However much these policies resonated with each other on the level of their inherent logic, they operated as adversaries in the fierce competition for funding which characterized the internal politics of the post-war British state. Reluctance to reinvest the peace divided in military defence delayed the resurrection of a Civil Defence machinery despite growing international tensions. Post-war Civil Defence would only begin to take shape after the Berlin Crisis in the summer of 1948. Once established, Civil Defence would continue to be plagued by persistent underfunding and routinely overridden by economic considerations. Plans for the industrial dispersal of essential industries recommended within *The Effects of Atomic Bombs* were, for example, were sidelined on account of their economic impracticality (Grant, 2010). Economic considerations would be powerful impetus in the redesign of Civil Defence machinery from 1955.

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[20] The memory of The Blitz would continue to exert a profound influence on the imaginary of war and was also drawn upon as evidence of Britain's hardened disposition (especially vis-a-vis the Americans) in the face of bombing raids (see Grant, 2010).

Imagining Armageddon: The Strath Report

The *Castle* series of hydrogen bomb tests, conducted by the United States in the Bikini Atoll in March 1954, were intended to be secret. In the early hours of March 1st, the *Bravo* device was detonated. The 15 megaton blast grossly exceeded predictions of a 5-6 megaton yield, emitting a fireball which rose to 45,000 feet, carrying up with it shattered coral and debris which formed a cloud reaching 114,000 feet (Arnold, 2001: 18). Radioactive dust—fallout—was carried along by the vicissitudes of the winds, which had themselves undergone an unaccounted for shift, far beyond the boundaries of the delimited danger zone and towards the Marshall Islands. White flakes of fallout were reported to have snowed down for several hours thereafter. By the 5th of March American servicemen had removed 236 islanders from the Rongerik, Rongelap, Ailingae and Utirik atolls suffering from radiation burns, hair loss and lowered blood counts, and escorted them to hospital (Arnold, 2001: 19). Nine days later, the Japanese fishing vessel the *Lucky Dragon* returned to port, its crew suffering from the symptoms of radioactive contamination: nausea, vomiting and general fatigue followed by the development of lesions, jaundice, swollen livers and discharge emitted from the eyes and ears. One crew member, Aikichi Kuboyama died several months later from liver and blood damage. The contamination of the crew provoked anti-American protests in Japan and newspaper headlines around the world.

Fears were initially centred on the blast—calculated at some hundreds of times more powerful than the atomic bombs dropped on Nagasaki and Hiroshima—with newspaper headlines around the world focusing on the Atomic Energy Commission chairman Lewis Strauss' claim that the new hydrogen bomb could be built large enough to destroy a city the

size of New York. The first internal Whitehall reviews, conducted as a result of the prohibition on the sharing of nuclear intelligence by the 1946 McMahon Act, also concentrated almost exclusively on the amplified blast wrought by the hydrogen bomb (Grant, 2010: 81), scaling-up (once again) work performed by Operational Researchers on blast damage caused by atomic bombs (Smith, 2009). Civil Defence considerations were similarly scaled-up: expanding the number of persons to be included in the 'priority classes' of evacuation plans from 4.6 to 12 million (Grant, 2010: 83). However, in addition to displaying the massive amplification in blast power the Bravo tests announced the arrival of fallout, a development which would itself profoundly impact the understanding of nuclear war and what 'survivability' would actually entail.

Only in the winter of 1954 would the implications of fallout begin to be studied in their own right when Norman Brook established the Central War Plans Secretariat (CWPS) in the Cabinet Office to examine the effects of fallout for British defence planning. The CWPS was organized to facilitate a holistic approach which considered both the offensive and defensive implications of thermonuclear weaponry for Britain simultaneously, rather than as separate considerations as had been the tendency in the past (Grant, 2010: 87). William Strath, from the Treasury, was appointed to lead an interdepartmental group to examine 'the broad consequences of fallout on our war plans as a whole and indicate the guidance which Departments responsible for detailed planning would require' (quoted in Grant, 2010: 88-9). An initial report, commissioned from the Joint Intelligence Committee (JIC) to guide the planning assumptions of the Strath Group, immediately recognized the strategic implications of this new weaponry. While suggesting that the introduction of thermonuclear weaponry made global war less probable overall, given the stakes involved, it warned that should war

erupt Soviet strategy would undoubtedly immediately seek to 'render [Britain] unusable for a very long time'.[21]

> To render the UK useless as a base for any form of military operations the simplest and most effective form of attack would be by surface bursts effected in suitable meteorological conditions. These, besides causing local damage, would cause considerable areas of the country to be affected by fall-out. We are advised that something like ten "H" Bombs, each of a yield of about 10 megatons, delivered on the western seaboard, with the normal prevailing winds, would effectively disrupt the life of the country and make normal activity impossible.[22]

Despite the massive increase in blast potential offered by thermonuclear weaponry, strategic advantage would rely on the tactical manipulation of the flows comprising the atmosphere as a way of distributing fallout with lethal effect.

The final Strath Report, presented to government ministers on 8 March 1955, opened by discussing the comparative advantage offered to fallout-maximizing ground-burst devices over blast-maximizing air-burst devices. While a ten-megaton air-burst device would maximize immediate devastation, destroying houses up to six miles away and causing fires in houses up to 15 miles away; a ten-megaton ground-burst device which maximized fallout, would destroy houses only up to five miles but cause 'considerable sickness' to those within their houses up to 50 miles downwind and to those in the open air up to 140 miles downwind.[23] There could be no doubt that the massive amplification in blast power was an important consideration: "Life and property would be obliterated by blast and fire on a vast scale...forty-five times as great as the total tonnage of bombs delivered by all Allies over Germany, Italy and occupied France throughout the whole of the last war" with the majority of

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[21] CAB 158/20. JIC(55)12, 'The "H" Bomb Threat to the UK in the Event of War'
[22] Ibid.
[23] CAB 134/940. HDC(55)3, 'The Defence Implications of Fall-out from a Hydrogen Bomb'

deaths expected to be attributed to blast and fire rather than radiation, in a ratio of 3:1.[24] However, it is clear from a reading of the Strath report that the novel danger of fallout presented an altogether new form of threat, one which exceeded existing frameworks of intelligibility whose metrics were based on the trajectories of blast. The uncertainty surrounding fallout resonated with the spectacular dangers it was associated with to create an apocalyptic vision which would displace previous imaginaries of a post-nuclear world largely influenced by memories of the Blitz.

In contrast to the direct blow to the materiality of the body perpetrated by the blast, fallout operated through the poisoning of the environmental milieu in which biological life subsists. It was a threat which integrated with the multiple flows comprising the atmosphere to spread its deadly effects over a wide territory—an instance, therefore, of what Peter Sloterdijk (2009) would term 'atmoterrorism'. The appendix to the report contained a map containing a novel visualisation of the post-attack state: a map of the United Kingdom, superimposed by a series of concentric rings, layered to represent differential zones of contamination. The risk map operated as a tool for the visualization of risk over space and time that would itself be mostly undetectable to the senses. The temporality of this threat was not punctuated—an immediate exception imposed upon a previously harmonious order—but one which unfolded progressively, integrating with the dynamics of the environment as a parasite utilizes its host, harnessing these autonomous flows for its own emergent 'becoming-dangerous' (see Dillon, 2007).

This emergent temporality, or becoming-dangerous, of fallout was further prolonged by its potential to contaminate water and food for lengthy durations after the initial blast which

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[24] Ibid.

further degraded the prospects for post-attack survivability. Radioactive contamination would 'immobilize considerable areas of the country and force the inhabitants to keep cover for some days and in certain areas for a week or more".[25] Contaminated agriculture and livestock would be unusable for a minimum of two months.[26] Like the indirect targeting of 'moral' bombing, fallout would target the various circulations which enabled and supported life. However, rather than attempt to destroy these circulatory infrastructures, fallout would arrest these circulations through poisoning the milieu in which life operates.

> No part of the country would be free from the risk of radio-active contamination. A single attack with ten 10-megaton bombs could deny us the use for varying periods of thousands of square miles of our agricultural land and the standing crops from a much greater area. Open water supplies for sections of the population would become undrinkable for weeks. The risk of starvation in the period immediately after the attack would be high.[27]

The scale of destruction paired with the lingering threat of fallout required greater attention be paid to the 'critical period during which the surviving population would be struggling against disease, starvation and the unimaginable psychological effects of nuclear bombardment.'[28]The prospect of 'the nation' reduced to a series of autonomous family units, cowering within their homes, dependent upon no one but themselves for their own survival, stood in abject contrast to aims of the solidarity promoting and fear-conquering technologies which comprised the British welfare state.[29]

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[25] Ibid.
[26] Ibid.
[27] Ibid.
[28] Ibid.
[29] Ibid.

Without adequate preparations, Strath warned that 12 million would die and 4 million would be injured and 13 million more 'many of them suffering from radiation sickness— would be pinned down in their houses for at least a week' with little prospect for rescue or medical aid.[30] While destruction would undoubtedly take place at an unprecedented scale, the report maintained that with adequate investment in preparations it would be possible to ensure the survival of the nation. This report recommended a more serious financial commitment to the traditional life-saving measures of Civil Defence including evacuation plans, local dispersal of remaining essential workers and the construction of shelters. However, preparations would also be required on the part of the population which required the advent of a serious public information campaign.

> Life in contaminated areas would demand a high degree of self-discipline on the part of every individual in the observance of elementary precautions to reduce the risks from exposure to radiation until it had subsided to an acceptable level.....such discipline could not be secured unless the need for it were widely known and the basic precautions thoroughly understood by everyone in advance.[31]

The Strath Report recommended a 'consistent policy of education' focused on informing the public as to the dangers of radiation and what could be done to minimize one's exposure to it.[32] But it also noted that public education would be required to underpin the policy of deterrence, recently outlined in the 1955 Statement on Defence: "The country's determination to resist aggression even at the risk of having to undergo nuclear bombardment is an essential element of the deterrent policy...this determination can be real only if the public understand

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[30] Ibid.
[31] Ibid.
[32] Ibid.

what is involved".[33] The difficulty, it noted, would be in ensuring that it was "done in such a way as to avoid spreading despondency or causing panic demands for unwarranted expenditure on protective measures".[34]

The report admitted ''[i]t would still be impossible to forecast how the nation would react to nuclear assault. The effect of this on dense populations would remain beyond the imagination until it happened'[35]. This would not, however, prevent the Strath Group from recommending preparations for the very worst. An attack would 'place a very severe strain on public morale and on the forces of law and order'[36] and in areas hardest hit 'there might be complete chaos for a time and civil control would collapse'.[37] It advised the construction of a 'machinery of control' whereby military control would replace civilian control to respond to the 'complete chaos' which would presumably erupt in heavily bombarded areas charged with the power to take 'whatever steps, however drastic,...considered necessary to restore order'.[38] A Working Party on the Machinery of Government in War (whose papers are still classified) was promptly established thereafter to begin investigations into a continuity of government machinery (Hennessy, 2010: 176). The nature of post-attack Britain may have exceeded the calculative metrics of Civil Defence. However, rather than being beyond the imagination, it was imagination itself which was relied upon to 'fill in the gaps'—dark imaginaries of just how bad things *could* get.

Imagination was invoked by the Strath Report but it was also being *formed.* Relying on science where it could and on imagination in many places where it could not the report forged

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[33] Ibid.
[34] Ibid.
[35] Ibid.
[36] Ibid.
[37] Ibid.
[38] Ibid.

a vision of post-attack Britain which would be highly influential for statesmen and bureaucrats. The discourse of the Strath report itself oscillated between the calculative language of techno-science, and the imagery and rhetoric of the mystical. Apocalyptic imagery appears throughout the Strath Report. Often, it appears for the sake of rhetorical flourish. But it also emerges in those areas of the document which struggled to elucidate the consequences of thermonuclear attack for the survival of 'the nation'. Western Political theory had long contemplated questions concerning the end of empire: the end of *a* world, as opposed to *the* world; of *an* age rather than time-itself. These latter questions were, of course, the domain of the religious—a division which stood to conceal the essential relationship between these two regimes of government (Dillon, 2011, Schmitt, 2005, Taubes, 2009), even in the 'secular' West. The devastating potential of thermonuclear weaponry paired with the uniquely concentrated geography of the UK served to collapse this distinction by introducing the prospect of the potential eradication of the species-life of the nation as a problematic of government.

The way in which this problematic was approached must further recognize how the prospect of national eradication resonated with already existing anxieties amongst the British elite concerning the end of the British Empire during this period. The curious mix of a distinctly Christian eschatology of resurrection and concerns regarding the decline of the British Empire is evident in the awkwardly reassuring conclusion of the Strath Report.

> The initial phase of attack would be succeeded by a critical period during which the surviving population would be struggling against disease, starvation and the unimaginable psychological effects of nuclear bombardment. But provided what was left of the nation could get through this period and the survivors were able to devote their resources to the needs of reorganizing the country, they should eventually be able to produce a wide enough range of goods to meet ordinary civilian needs. The standard of living of the reduced population, although substantially lower than at present, would still be well above that of the greater

part of the world. The country would be left with sufficient resources for a slow recovery.[39]

Inasmuch as these eschatologies governed the articulation of this problematic they also informed the policy of 'national survival' which materialized post-Strath. A machinery of national survival was to be consecrated for the re-actualization, and indeed, resurrection of the British nation post-attack.

Civil Defence Post-Strath: Preparing for Armageddon

While policy based on the Strath recommendations including the evacuation of target areas, dispersal of those remaining and shelter construction was initially formulated (Hennessy, 2010: 170), it was never fully financed. The advent of hydrogen weaponry was taken to actually decrease the likelihood of nuclear war breaking out between the Soviets and the West given its devastating potential. Economic crises from 1955 would further undermine Civil Defence considerations and ensure that bunkers were not built and stockpiles remained persistently below recommended levels (Grant, 2010: 154). As an 'insurance' against nuclear war, life-saving technologies such as bunkers and evacuation procedures were taken to be prohibitively expensive, given their questionable integrity, and spending on them was subsequently reined in by Chancellor of the Exchequer Harold Macmillan in early 1956 as rising inflation pressured the Government to reduce expenditure (Grant, 2010: 113). Civil

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[39] CAB 134/940. HDC(55)3, 'The Defence Implications of Fall-out from a Hydrogen Bomb'

Defence spending would subsequently fall from a projected £70 million in March 1955, to less than £22 million in 1957/58 (Grant, 2010: 121). The reduction in civil defence spending could be re-invested in the primary policy of 'active defence'—the thermonuclear deterrent—of which Civil Defence was to play a supplementary, though very necessary role. What remained of Civil Defence can be analytically separated into two separate, but nonetheless allied, 'spheres' (Grant, 2010): the visible and non-visible.

The Non-Visible: Ensuring National Survival

Faced with the awesome destructive power of thermonuclear weaponry the objective of Civil Defence would shift from protecting the population—an expensive and dubious project—to ensuring the survivability of those sections of the population which *happened* to survive an attack (Grant, 2010). The precedent placed on 'survivability' reoriented the temporal focus of security measures from life-saving measures designed to protect the population from immediate dangers such as fire and blast during the event itself to optimizing the post-event recovery process. This coincided with a shift in the object of protection from the material bodies which comprised the population to the regenerative infrastructure would permit the re-actualization, and indeed resurrection, of the British state. This was a question of a regenerative biopolitics tasked with elucidating and securing the infrastructural requirements for the re-actualization of not just life-itself but, as we will see, a specifically British way of life.

Reflecting changes in the strategic environment as much as in the economic environment Civil Defence was to be reduced to a 'nucleus organization' (Grant, 2010: 118) which could be financed, expanded, and fully actualized in the lead-up to nuclear release. A crucial assumption was made for planning purposes that nuclear release would be preceded by six months of rising tensions. For civil defence planners this permitted more costly plans, such as stockpiling, to be delayed, saving costs in the short-term. This emergent Civil Defence machinery was designed to expand alongside international tensions actualizing a secret 'continuity of governance' machinery in the lead-up to thermonuclear assault. This included TURNSTILE,[40] the bunker under the Cotswolds which would act as the seat of Government in the period of reconstruction as well as an alternative centre for the authorization of a retaliatory nuclear strike (Hennessy, 2010: 259), and eleven regional seats of government (RSGs), [41] distributed across Britain and empowered through emergency legislation to enact military control over the regions should communications with Whitehall be discontinued. Planning priorities included ensuring the availability of resources and the restoration of order through military control over a population prone to panic, violence and subversion.

Plans for the creation of this germinal state were further refined following the 1960 Home Defence Review, and again in the aftermath of the 1962 Cuban Missile Crisis which demonstrated that nuclear escalation could proceed at a much faster rate than previously imagined. An Emergency Powers (Defence) Bill would be drafted to speed up the country's transition to a war-footing, which was to be rushed through both Houses of Parliament in the

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[40] From 1963 the name TURNSTILE would be used for this bunker which had formerly gone under the names of SUBTERFUGE and BURLINGTON.

[41] Fieldwork conducted for this projected included a visit to the Hack Green nuclear bunker, not far from Keele University, which operated as the Regional Seat of Governance for the northwest of England from 1984 to 1992. It currently operates as a museum.

final days of peace. The Bill would provide Regional Commissioners (the heads of each RSG) complete power over life, property, food and finance within their region (Hennessy, 2010: 202). Section 4 of the Bill afforded these Regional Commissioners power of the administration of justice up to and including the death penalty—although it was recommended that such sentences be reviewed by at least three people who had held high judicial office (Hennessy, 2010: 203-4).

No doubt these additions to the continuity of government machinery were informed by strategic studies of the late 1950's which advanced an even bleaker assessment of the prospects for civilian survival post-thermonuclear attack. 'Breakdown' had its origins in the Admiralty's Directorate of Operational Research (DOR) which in 1954/55 began utilizing techniques of Operational Research to speculate on the nature, course and duration of future wars between the great powers. Utilizing economic techniques to vary parameters such as GNP, defence budgets, likely targets and number of deliveries, the group sought to establish a range of possible futures, rather than an exact future based on techniques of historical extrapolation which could be fitted into operational assumptions and war-gamed (Moore, 1997). Service members used this data for war-games which pitted bombers against surface-to-air guided weaponry, whilst scientists and representatives of civil ministries used it to investigate the potential damage and possible recovery rates for infrastructure post-attack (Moore, 1997). A final 1957 report, prepared for delivery to the US in the hopes of initiating an intelligence exchange, was to detail a thousand different possible scenarios.[42]

The concept of breakdown would emerge around 1959—the same year that the Study

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[42] The majority of Civil Defence research was conducted in the United States. Operational Research, which differed from similar American techniques of systems analysis, provided a unique British contribution to civil defence planning (Moore, 1997: 76) This is similarly true with the notion of 'breakdown'.

Group of the Joint Global War Committee was renamed JIGSAW (Joint Interservice Group for the Study of All-Out War). It quickly became a preferred method to analyzing an enemy attack, insofar as it provided a measurable objective to nuclear attack which could be used for setting budgets and comparing weapons systems (Moore, 1997: 85-6) Breakdown refers to the level of destruction required to ensure a society is no longer be able to function as an integrated whole (See Moore, 1997). More specifically it was the point beyond which the population was expected to turn inward, concerned with their own survival (Hennessy, 2010). The population at this point would become a liability to the state: industry would collapse, government would be ineffectual, and, most importantly, the capacity to continue to prosecute war would grind to a halt. In 1959, national breakdown was estimated at 35-50% damage in 300 Soviet cities (Moore, 1997) or 30% destruction of any given city to render its population 'ineffective' (Hennessy, 2010). Breakdown was similarly said to occur when 50% of the population has been rendered 'ineffective' (Hennessy, 2010). Finally, whereas the number of megaton deliveries required to cause 'breakdown' in each of the USSR and US was similarly estimated at about 450, breakdown in the UK was calculated as little as 25—well within the range of what the USSR could achieve within a retaliatory strike (Hennessy, 2010).

Studies of breakdown reinforced long-held cultural understandings of the de-generation of the social in the face of fear and violence, and provided a quantitative measure useful for planners in both Civil Defence and the military. Departing from a biopolitics focused on guarding a population from a range of normalizable risks which might collectively decrease the life-prospects of the mass body of the population, as in social insurance, the continuity of government project signalled a novel preoccupation with locating and securing the infrastructure upon which national life could be regenerated, post-breakdown. The

resurrection of the state was taken to be essential for the provision of order necessary for this form of life to actualise. Moreover, these plans sought to ensure that this would be a specifically *British* order: they emphasized the need for due process, jurisprudence and the rule of law in the maintenance of public order in post-nuclear Britain; they required Emergency Powers to be passed through Parliament; and they specified means for the protection of the Queen by sending her to Canada aboard the royal yacht *Britannia*. Together these measures attest to the extent to which a foundational legitimacy for New Britain played on the minds of planners. In addition to the partitioned machinery of central government, artefacts considered essential to the regeneration of Britain including the art treasures of some London museums were safeguarded in underground bunkers. The idea of Turner's being afforded pride of place in the scarce real-estate of nuclear bunkers, attests to the priority placed on the security of a way of life when life-itself could no longer be protected. More to the point, it reflected a shift in the understanding of 'the nation' from the material bodies which composed it, to an abstract form, reducible to a range of artefacts containing the potential to germinate in a post-apocalyptic world a re-actualized, resurrected, British state.[43]

The Visible: Mobilizing Anxieties

Complementing this continuity of governance machinery for the preservation of order was a visible programme of Civil Defence designed for the maintenance of public morale.

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[43] It is interesting to note that this would occur at roughly the same time that molecular biologists were asserting that life itself was something reducible to a virtual form of immaterial information contained within DNA, which could be actualized to form a material life (See Kay, 2000, Hayles, 1999).

Considerations of morale were especially pertinent given the adoption of a policy of deterrence, signalled even before the final publication of the Strath Report. In addition to announcing the government's commitment to acquiring an H-bomb itself, the 1955 *Statement on Defence*, published in February, declared the importance of Civil Defence within a policy of deterrence by 'demonstrating the country's determination to resist aggression in all its forms, [and] buttress the resolution needed to sustain an effective deterrent policy' (quoted in Grant, 2010: 90). Civil Defence would be vital for sustaining public support for the policy, especially during times of heightened tension, by maintaining the conviction that nuclear war would be survivable. Indeed, a nuclear deterrent was only credible if the enemy were convinced the UK was prepared to use it. The guiding fear was of 'another Coventry' (Grant, 2010: 82): the British city which experienced devastating bombing during the Second World War and whose council had sought in repeated instances to vocally express their rejection of Civil Defence precautions as a facade. Especially in a time of escalating tensions, Civil Defence would have to act as a bulwark against the gradual descent of the population into neutralism in international affairs.

Strath's suggestions for increased investment in costly measures of protective Civil Defence exacerbated already existing divisions between the Home Office and the Ministry of Defence. Debate would once again turn on the value of sustaining morale. The Home Office, charged with coordinating civil defence, was broadly supportive of Strath's recommendations for further investment in Civil Defence. Within the Cabinet's Ministerial Committee on Home Defence, Home Secretary Gwilym Lloyd warned that lack of investment in Civil Defence would ultimately undermine morale and the nation's will to continue the fight (Hennessy, 2010: 180). Ministry of Defence officials, who traditionally viewed the Civil Defence budget

with suspicion, were weary of the costs associated with these `passive measures` arguing instead that the Civil Defence budget would be better re-invested in augmenting Britain's nuclear arsenal in line with a policy of deterrence which could actually prevent war (Hennessy, 2010: 180).   For Minister of Defence Selwyn Lloyd, 'the objective should be to limit the level of expenditure on home defence to the minimum needed to maintain public confidence' (as quoted in Smith, 2009: 10, ft. 42). Civil Defence spending was to be reduced to the limit below which public confidence would deteriorate, estimated at £25 million per annum (Grant, 2010: 118). This argument was supported by the Treasury which was looking to save in period of austerity (Grant, 2010: 104).

Promoting the notion of 'survivability' of thermonuclear war meant mobilizing 'those measures which provided a positive and visible indication of the Government's support for the voluntary civil defence service' (quoted in Grant, 2010: 129). While civil defence spending was falling, the budget of the Civil Defence Corp, the most visible element of Civil Defence, was itself augmented (Grant, 2010: 86). In acting to buttress the morale of the population, the governance associated with Civil Defence began to disassociate itself from the wider aims of the welfare state. Whereas the welfare state was designed to protect populations from the fears which could lead, most often through panic, to political instability, civil defence literatures increasingly sought to mobilize, rather than close out fear, within a general project of 'preparedness' (See Collier, 2008). The notion of security pursued by government in this respect would neither be the condition of the absence of threat, nor the mitigation of vulnerability to threat, but, importantly, an affective disposition associated with the confidence of one's ability to survive in a dangerous world, full of risks which could not be entirely eradicated.

The Strath report insisted that an information campaign concentrated on the effects of radiation and fallout would be crucial to maximizing survival. The public needed to be instructed as to how to protect themselves from blast, as well as radioactive fallout. Moreover, the population would have to exercise self-discipline: keeping indoors and stockpiling adequate food and water. However, the British government was reluctant to embark on a public information campaign, despite its importance for national survival, insofar as they suspected that it had the potential of undermining public morale for the deterrent—the primary policy of British defence (Grant, 2010: 261-2). Public education campaigns in Britain paled in comparison to those conducted in the United States (Davis, 2007). To the extent that public information campaigns were conducted, they primarily took the form of advice to householders. Based on methods developed in the 'Rose Cottage Experiments' designed to reduce the risk of fire and radioactivity, pamphlets focused on how to turn the domestic space into an inner refuge (Smith, 2009). Lessons included deciphering raid sirens; sanitation; first-aid; stockpiling food and water; reinforcing doors and windows; choosing and equipping a fall-out room; and the importance of your radio. Together they formed an instrumental regime of practices to occupy the anxious householder—perhaps also keeping them from engaging in the sorts of reflective thought which could lead to fear, despondence, or even subversion. Anxieties could be mobilized towards productive tasks such as preparing one's domestic space for attack, rather than the disruptive activities associated with fear and panic.

<u>Security in the Welfare/Warfare State</u>

The easing of Cold War tensions which followed the Cuban Missile Crisis, paired with growing concerns over the British economy, contributed to a steady decline in funding for British Civil Defence. The 1965 Home Defence Review determined the Civil Defence Corps to be too costly relative to their benefit in the maintenance of support for deterrence and suggested their number be cut substantially. On the other hand, the function of the system of RSGs, whose existence had been made public in the 1963 pamphlet *Danger! Official Secret: RSG-6* published by Spies for Peace, was placed into question in recognition that they would be the Soviets' first targets in the event of war. The plethora of public service cuts which followed the November 1967 devaluation of the pound reduced British Civil Defence to its bare minimum. Civil Defence was officially placed on a 'care-and-maintenance basis' which reduced civil defence spending to £7-£8 million a year by 1970. This entailed the abandonment of the Civil Defence Corp, a cessation on the purchase of new assets and the reduction of planning and training to that which would be necessary to resume preparations at a later date (Grant, 2010: Chapter 8). British Civil Defence had been effectively folded, sustained only by the statutory duty contained in the Civil Defence Act of 1948 of Government and local authorities to maintain civil defence plans, which was now interpreted as preserving the capacity to develop plans in the event of an imminent attack.

The post-Strath Civil Defence machinery differed markedly from that which stood before it. Civil Defence had formerly been organized on a security logic principally concerned with the protection of the material bodies which comprised the nation through

policies of protection and dispersal. The objective of this machinery was as much to protect the material bodies of the nation as to protect them from the fears which, if allowed to manifest in the form of panic, could prove highly disruptive to the functions of the state-- especially those associated with war-making. This logic of protection resonated with the social-stabilizing objectives of the wider British welfare state. Civil Defence and the welfare state, though different in many ways, could be said to emerge from a common matrix of governmentality in which the state played a primary role in protecting 'the social' from all the dangerous anxieties which threatened its dissolution.

The Civil Defence machinery which emerged post-Strath was guided by a very different logic from that which preceded it. Rather than a prophylactic project of protection, both 'spheres' of the post-Strath Civil Defence machinery operated with the aim of producing a particular 'way of life' equipped to operate in a dangerous world. The first sphere consisted of a secret continuity of government machinery which was constructed with the aim of providing the governmental infrastructure required for 'national survival' post-thermonuclear attack. This machinery was concerned not only with the provision of the conditions for 'life', but sought the re-actualization of a particularly British way of life. What was identified then as conditions of possibility for a British way of life—from the authoritarian machinery for the violent re-imposition of order to those artefacts through which a sense of British-ness could be distilled—is revealing of how the British establishment reflexively perceived itself and its responsibilities at that time. Performing a similar test today—that is, going into these old Cold War bunkers to see if what they hold can tell us anything about who 'we' are—one would uncover in numerous cases 'server farms' containing the data of some of the world's richest

companies.[44]

The second, 'visible' sphere of Civil Defence consisted of governmental measures which aimed to foster subjectivities which could thrive in dangerous and uncertain worlds. Public information campaigns promoted a discourse of 'preparedness' which sought to mobilize anxieties within positive projects which would build one's confidence—the affective *feeling* of security—in the lead-up to nuclear attack. Such subjectivities were vital to maintaining support for the official policy of deterrence. Fear, rather than being quelled by the visual the presence of technologies designed to protect the material body, was to be mobilized as a motivating force to enact an instrumental regime of activities which exercised anxiety and gave rise to a sense of confidence and self-reliance. This logic required all the skilful balance of immunology: the risks of blast and radiation has to be known well enough to engender the requisite levels of anxiety necessary to encourage 'preparedness', but they could not be permitted to amplify into the counter-productive affect of fear which threatened to manifest panic and despondence. This precarious balance was a constant concern for the British state which, over the course of the Cold War, remained reluctant to really engage with any form of public information. To the extent that they did (such as with the infamous Protect and Survive campaign), information was not only discredited as useless, but labelled propaganda and used to fuel the Campaign for Nuclear Disarmament (CND) (Grant, 2010).

The infrastructural diagram for governance (See Deleuze, 1988) shared by these two spheres, in a sense, shifted a considerable portion of the responsibility for the provision of security from the state to the citizen. More specifically, the responsibility of the state was

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[44] Yes, even in a post-apocalyptic world VISA will remember you owe them 300 quid! See, for example, Alok Jha (2009) "Secrets of the data bunker: A former mine in Wiltshire once equipped as a cold war government retreat has become one of the world's greenest server farms"

exercised in the form of providing the infrastructure required for householders and Regional Commissioners to effectively prepare for the threats which they expected to face with a considerable degree of autonomy. In this sense, this new logic of Civil Defence sat uneasily alongside the prerogatives of the British welfare state. In contrast to the logic of quelling fear, preparedness campaigns comprised a shift in governmental objectives from protection to enablement. Emotions, rather than being closed down by disciplinary techniques which aimed to 'steel' a population, were to be channelled and manipulated for the sake of building a nation of confident, self-reliant individuals affectively predisposed to live with risk and politically supportive of a policy of deterrence. At the same time however, the 'insurance' provided in the event of the deterrent's failure increasingly came to resemble a form of security provided by insurantial technologies: one which focused on the security of a way of life, rather than the material body as such, and which elicited subjects confident in their ability to thrive in dangerous and uncertain worlds.

This shift in governmentality within the realm of Civil Defence would serve as an important antecedent for the emergence of discourses of resilience and neoliberal governmentalities from the 1970s. These new techniques of governance resonated in important ways with neoliberal critiques of the dependence cultivated by the welfare state. The next chapter details how this technique became situated within an emergent epistemology underpinning both resilience strategies and neoliberal governmentalities.

Chapter 3

The Nature of Neoliberal Governance

From the 1950s, substantial American military funding was being provided to researchers at The University of Chicago, the University of Maryland and the University of Oklahoma to investigate population behavior in civilian emergencies.[45] The military was interested in extrapolating the conclusions of these studies to understand how civilians react to crisis both to inform the design of domestic social controls and direct offensive strategies (Quarantelli, 1987, 1990, 2004). The empirical research collected corroborated the evidence of earlier studies, including those of Mintz (1951) and Strauss (1953), which had argued that the behaviour of populations in emergency was better characterized as rational action, rather than irrational hysteria, based on an individual's perception of their situation. This proposition was assisted by E.L. Quarantelli's popular redefinition of panic as "actual (or attempted) physical flight" (1957: 188) which, though more empirically verifiable, was quite obviously a radical departure from an understanding of panic in terms of irrational social hysteria. Panic,

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[45] Detailed histories of this field of research are now provided by a number of sources (see Dynes and Drabek, 1994, Quarantelli, 1987, 1990, 1994, 2004).

Quarantelli concluded, is 'a relatively uncommon phenomenon' which is 'over-exaggerated' in disaster literature (1954: 275). To the extent that it does manifest,

> panic flight does not involve irrational thought if by that is meant anything in the way of faulty deductions from certain premises. From the position of an outside observer this may appear to be the case but, from a participant's viewpoint, given his limited perspective of only certain portions of the total situation, no such interpretation or irrationality can be made. For the fleeing of person, his action appears to him quite appropriate to the situation as he perceives it at that time (Quarantelli, 1954: 272).

Significantly, Quarantelli warns that "[o]ne of the most important contributory conditions [to the onset of panic] is the existence of a social or group predefinition of a crisis as one that is likely to eventuate in panic flight" (Quarantelli, 1954: 275).

While reminiscent of earlier studies which had investigating panic as a contagion (see chapter two), Quarantelli's conception of panic displayed an important qualification. Panic's transmission mechanism would no longer be perceived in energetic terms as a contagious affect which by exciting the body served to undermine rationality, and by extension sociality, but in terms of an adaptive, rational response to information within a situation of perceived entrapment. This shift in the understanding of panic aligned with a broader trend in sociological research of the late 1950s in which notions of 'suggestibility' and 'contagion' were displaced by an emphasis on emergent norms and adaptive tendencies as explanations of collective behavior (Orr, 2006: 128-134). This shift was indicative of the creeping influence of cybernetics and information theory within American sociology which would come to understand the maintenance of a stable social order as a function of information exchange (Orr, 2006).

By the turn of the twenty-first century Disaster Researchers were able to confidently assert, based on rigorously empirical case-studies and in-depth participant interviews, that panic was, in fact, a 'myth' (Clarke, 2002, Cocking et al., 2009, Johnson, 1985, Keating, 1982, Sheppard et al., 2006, Tierney, 2003, Wessely, 2005b). In stark contrast to the competitive, self-interested behaviour assumed to accompany disasters, experts documented the widespread cooperation—even altruism—which often manifest during an emergence event. Social norms, far from breaking down, not only continued to govern behaviour (Cocking et al., 2009, Sime, 1983, Drury et al., 2009a, 2009b) but proved remarkably resilient with incidences of violence and crime often subsiding significantly (Auf der Heide, 2004, Tierney, 2003). To the extent that 'irrational behaviour', or panic, was witnessed, experts, in retrospect, argued that these were in fact rational decisions based on imperfect knowledge within a rapidly unfolding event, which only appeared to onlookers as irrational (Tierney, 2003). Panic was nothing more than a fallacious, culturally ingrained belief, perpetuated through its ubiquitous appearance in media portrayals of emergencies, but having no basis in reality (Clarke, 2002, Tierney, 2003).

Researchers also noted the implications of this research on the organization, direction and conduct of emergency responses (Cocking et al., 2009, Dynes and Drabek, 1994, Manyena, 2006). From the traditional emphasis on top-down, disciplinary control of populations-in-emergency emergency management should instead be based on facilitating and optimizing the natural, self-organizational capacities, or 'resilience', of populations-in-emergency. Instead of withholding information, for fear of inciting panic, populations in emergency should be provided with all the information they required to self-organize an evacuation or response (Proulx and Sime, 1991). Government, within an unfolding emergency, should not look to direct, but to supplement and encourage the natural tendencies

of those in emergency events to help themselves. People are to be encouraged, not directed; managed, not controlled.

The reorganization of UK Civil Contingencies around the value of resilience has been legitimized by the insistence that it builds on the insights of this research. Disaster Research continues to be cited within research commissioned by the Civil Contingencies Secretariat (Challenger et al., 2010a, 2010b) not least due to the persistence of assumptions of panic—even amongst emergency responders. As will be discussed in depth in chapter 4, resilience strategies aim to optimize the self-organizational capacities of populations in emergency to collectively organize responses to crisis. But disaster research also serves to legitimise resilience strategies by premising the introduction of these policies on an empirically validated re-evaluation of collective human behaviour within emergency events. This chapter seeks to advance an alternative to this positivist explanation: that the appearance of 'resilient populations' is an *effect*, rather the cause, of a broader restructuring of rationalities and practices comprising liberal governance. 'Resilient populations', in other words, are the correlate of a specific order of governance—namely, neoliberalism.

Resilience is here understood to be a particular speciation of life enacted by neoliberal order of governance. This approach places a priority on the constitutive effect of practices in shaping our understanding of the world around us. Paul Veyne suggests that "[o]bjects seem to determine our behaviour, but our practice determines its own objects in the first place. Let us start, then, with that practice itself, so that the object to which it applies is what is only in relation to that practice" (Veyne, 1997: 155). 'Resilient populations' are not a socio-historical constant whose essence can be determined and communicated by science. They represent a speciation, or specific enframing, of life forged and sustained through the practices of

neoliberal governance. This chapter seeks to identify the conditions of possibility for such an enframing to emerge by focusing on changes in the order of order of power/knowledge underpinning liberal security governance.

Mirowski and Plehwe (2009) have commented on the notoriously difficult task of defining neoliberalism. Tracing the intellectual development of neoliberalism within the Mont Pèlerin Society—the "central thought collective that has conscientiously developed the neoliberal identity for more than sixty years now" (Plehwe, 2009: 4)—they draw attention to both the political affinities and profound divergences of opinion which existed within this influential institution (see especialy Mirowski, 2009). This chapter focuses specifically on the formulation of neoliberalism promoted by the Hayekian 'wing' of the Mont Pèlerin Society. Hayek's later work, which drew heavily on concepts adopted from the complexity sciences to posit the market as an instance of a 'complex self-maintaining order' (Hayek, 1988: 9) characterized by emergent, non-linear processes of evolution, advanced a formulation of neoliberalism distinct from its classical predecessor. Consistent with classical liberalism, Hayek interpreted the 'natural' status of the market to confer limits on the degree to which government could regulate and control its processes. Where Hayek's project increasingly diverged from classical articulations of liberalism over the course of his career was on the nature of this 'nature'.

Hayek's opportunistic pillaging of the discourses of cybernetics and complexity theory to buttress his own political project has been the subject of some recent studies (Cooper and Walker, 2011, Mirowski, 1997, Mirowski, 2007). However, it is possible to contextualize Hayek's appropriation of the discourses of the natural sciences by drawing attention to the symbiotic relationship which has existed between ecology and economics as privileged sites

from which to interrogate 'the natural'. Tracing a genealogy of the co-constitution and co-evolution of these fields, this chapter aims to show that the simultaneous rearticulation of ecology and economics within the framework of the complexity sciences marks a radical departure from the equilibrium-based models which carried from the classical formulations of these fields through to the cybernetically-inflected models dominant in the period following the Second World War. This shift in the archaeological structure of knowledges pertaining to the natural is simultaneously affirmed by, and supportive of, neoliberalism.

In pursuing this line of inquiry, this chapter looks to make explicit the epistemological order supportive of resilience strategies. It takes as its empirical referent influential theoretical discourses where the emergence of this order may be investigated. Methodologically, this chapter is somewhat distinct from the others in which the civil contingencies machinery is the direct referent of investigation. However, it serves an important genealogical purpose: demonstrating how governmental techniques established in the previous chapter became synthesized into more general governmental discourses through the influence of a novel understanding of nature, constitutive of an emergent regime of truth. Once made explicit, the epistemological order detailed here will support empirical analyses of subsequent chapters.

The nature of Nature

Before the term *oecology* was coined by German Darwinist Ernst Haeckel in 1866, references to the study of 'nature's economy' abounded. The phrase derived from Linnaeus' 1749 *The Oeconomy of Nature*: a study of the divine order visible within nature's design. In

the late eighteenth century the term *oeconomy* still carried a connotation with household management—the original sense of the term from which it derives the prefix *oikos,* Greek for home or habitation. Thus, the title of Linnaeus' highly influential 1749 *The Oeconomy of Nature* referred to the transcendent Creator's orderly design of nature rather than an allusion to 'political economy' in the contemporary sense. Early studies of nature's economy marvelled at the balance and harmony achieved by this divine design which paired ends with means down to the infinitely small detail (Worster, 1994). Yet, while God's infinite attention to detail was a source of marvel, it provided a problem for translating nature into a model for human governance. While man could aspire to this level of management, it was only God, with his infinite wisdom, who could achieve such perfection in design.

Ecology,[46] which emerged as a field of study at the threshold of the late eighteenth and early nineteenth centuries, was to purge the idea of a transcendent ordering of nature by a divine Creator and replace it with a model of immanent self-ordering through competition. As is well known, Darwin credited Thomas Malthus for insights leading him to the theory of natural selection, which echoed economic notions of the invisible hand as a mechanism responsible for the immanent self-ordering of the market. However, the success of classical economic liberalism was similarly based on its success in articulating market mechanisms as 'natural'. In his lecture series *The Birth of Biopolitics* Foucault discusses how from the middle of the eighteenth century the market transitions from a site of jurisdiction against fraud—a significant risk between the sixteenth and seventeenth centuries—to a site of veridiction: 'a site and a mechanism for the formation of truth' (2008: 30). Integral to this shift, Foucault argues, was the 'discovery' of the market's ability, when left to its own devices, to generate a

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[46] In 1893 it was decided by the International Botanical Congress to change the name of the field to our modern spelling 'ecology' (Worster, 1994)

'natural price': one which accurately represents the relation between costs of production and demand. The 'natural' status of the market was used to argue for the displacement of government intervention from ensuring justice within the market to limiting interference (and especially political interference) with these 'natural' mechanisms.

While references to ordered harmony faded as both fields became similarly conceptualized as sites of competition for scarce resources, the emphasis on balance would be preserved and given 'scientific' rigour within studies of market equilibrium. In his 1874 *Elements of a Pure Economics* (1954) Léon Walras provided the foundations for general equilibrium theory by outlining the basic equations for a general equilibrium model and advanced a proof for the existence of a solution (Walras, 1954: 169). Moreover, Walras sought to specify how this solution would be arrived at through the 'natural' adjustment mechanisms which exist within a competitive market. Competitive markets arrived at equilibrium prices—those which perfectly coordinate aggregate demand with supply so as to clear the market—through a process of *tâtonnement* ('groping towards') (Walras, 1954: 170). If prices were set under equilibrium levels, so as to render supply insufficient for demand, then prices would slowly climb as markets 'groped towards' equilibrium level, and vice versa. Through a process of 'sequential' tâtonnement markets would clear, one at a time, until prices converged at a general equilibrium. Likewise, destabilization of prices following an economic shock would be expected to adjust through tâtonnement back to equilibrium over time.

The natural tendency towards equilibrium was echoed at this time within ecological treatments of succession. By the turn of the twentieth century, ecology had become a prominent field, in large part due to its perceived insight into the integration of political and economic units which were used to inform strategies of social, and especially colonial,

administration (Anker, 2001). It is not unsurprising then, that a primary area of study was ecological succession: the colonization of plant and animal communities within a given region over time. Succession was premised on the widespread assumption of progressive development of a biotic community, consisting of both animal and vegetal species. Of particular influence to the field were Fredric Clements' theories of succession—widely suspected of having been derived from his reading of sociologist, and social Darwinist, Herbert Spencer (Worster, 1994, Anker, 2001, Kwa, 2002). Biotic communities were thought to progress from a relatively homogenous and undifferentiated community (in human terms: a hunter-gatherer society) to more heterogeneous 'complex' communities in which functions were harmonized into a functioning whole (modern European societies)—which for Clements, as for Spencer, functioned as a 'super-organism'. Increased harmonization of the whole would absolve the need for further adaptation, thus halting evolution at what Clements would term a climax community. A climax community refers to the ecological composition of this biotic (or human) community within the final stage in its development. The type of vegetation composing the climax stage—be it a forest, desert, marsh, grassland, or otherwise—was said to be predefined by regional climatic variables such as temperature, rainfall and wind. While external shocks to an ecological community could disrupt this progression, nature would always rebound to continue its march through intermediary stages, known as seres, towards its climatically defined climax.

In 1935 Arthur Tansley outlined an inventory of systems based on the value of 'stability' (1935). Stability was measured by the ability of a system to maintain its composure over time: Tansley used the example of atoms of chemical elements with low atomic number, which have existed for millennia, versus radioactive elements, with much quicker rates of

decomposition. The 'ecosystem', a term appearing for the first time in this paper in distinction to the 'biotic communities' and 'complex organisms' found in the holistic theories of Clements and Smuts, was a relatively unstable system given the range of factors both internal and external which could disrupt equilibrium. Yet the natural return of the system to equilibrium was assumed almost without question. "The universal tendency to the evolution of dynamic equilibria has long been recognized" (Tansley, 1935) and thus was provided no further explanation within the paper. Kwa (2002: 33) has suggested that this self-evidence may be related to the widespread reference in explanations of life processes at the turn of the century to Le Chatelier's late nineteenth century experiments which demonstrated that endogenous shocks to a chemical equilibrium would be responded to by other factors so as to restore equilibrium.

The scientification of ecology at this time was mirrored within the fields of economics. From the 1930's, Walrasian microeconomics would become more rigorously mathematicized as part of an overall trend in economics (Mirowski, 2002: 7, Weintraub, 1991). Weintraub (1991: 125) argues that in the process core concepts such as equilibrium, stability and the process of tâtonnement would be fundamentally reinterpreted. Hands (2009) argues that processes of tâtonnement would be rearticulated during this time to make them amenable to the neoclassical synthesis of Walrasian (microeconomic) theory and Keynesian (macroeconomic) theory, whose ascendency during this period would effectively displace a number of rival theories including Institutionalist, Marxist, and Austrian perspectives. Walrasian sequential tâtonnement would be replaced within the literature by Samuelson's version of tâtonnement which foregrounded speed of adjustment which more adequately accommodated Keynesian concerns regarding the 'stickiness' of some markets in adjusting to

equilibrium including especially, labour markets. Keynesian demand-management could thus be justified in assisting processes of tâtonnement to restore equilibrium in a more efficient and timely manner.

The common archaeological structure of the fields of ecology and economics from the time of their co-constitution was premised on a 'natural' telos towards a unique equilibrium following a systemic perturbation. The stability of systems to withstand shock—to move only incrementally away from equilibrium and return to it quickly thereafter—was recognized as a value with which to assess these systems and inform programmes of governance. The diagram of governance operating in relation to this ontologization of nature would operate a security logic of protection (see previous chapter) designed to protect systems from shocks in the first place, and speed their return to equilibrium following a perturbation. This is what Holling (1996) would call 'engineering resilience', the security programme advocated by systems ecologists concerned with speedily restoring a presumed 'natural' equilibrium. It was in opposition to both this logic of security that Holling would advance the notion of 'ecological resilience': a programme of governance which not reinterpreted the telos of security, but offered a radical re-ontologization of nature rooted within the discourses of the complexity sciences.

Nature isn't Normal: The Birth of Resilience

In the 1950's Clements' theory of a climax community would be refigured, but essentially preserved, as functional homeostasis when ecology was translated into the discourse of cybernetics. The ecosystem, understood as a cybernetic system, responded to destabilizing exogenous shocks through feedback mechanisms which would return the system to a pre-defined equilibrium state. Written in response to these models C.S. Hollings' highly influential *Resilience and Stability of Ecological Systems* (1973) would challenge the notion that nature was itself organized around a unique 'natural' equilibrium and, with it, challenge the long established belief in nature's telos. In doing so, Holling would draw on developments in third-wave cybernetics associated with chaos, complexity and self-organizing autopoietic systems in order to advance a security programme for ecosystemic sustainability which he would term 'resilience.'

Specifically, Holling took issue with the cybernetically-informed 'systems ecology' of brothers Eugene and Howard (Tom) Odum. Inspired by the writings of Alfred Lotka on the energetics of evolution, the brothers' work used systems analysis to study the function of energy flows within a system (See Odum, 1953, Patten and Odum, 1981, Odum, 1983). In the process, Tansley's notion of ecosystem would be reconceptualised as a cybernetic system progressively developing towards a climax-state of 'functional homeostasis'. In *The Strategy of Ecosystem Development* (1969) the idea of functional homeostasis is presented as both nature's telos and a security project: "In a word, the "strategy" of sucession as a short-term process is basically the same as the "strategy" of long-term evolutionary development of the

biosphere—namely, increased control of, or homeostasis with, the physical environment in the sense of achieving maximum protection from its perturbations" (Odum, 1969: 262). Achieving "maximum protection", it is noted, may however conflict with man's emphasis on "maximum production" (Odum, 1969)—an idea that is given further development by Eugene's brother Howard in *Environment, Power and Society* (1971). Here, H. T. Odum reflected on the implications of industrial-led growth for the sustainability of Western eco-systems, arguing that the depletion of fossil-based resources would demand a fundamental restructuring of economies along sustainable lines. Achieving such a programme would require a massive effort in the control engineering of economies with an eye to the natural limits of ecosystems (Cooper and Walker, 2011: 6).

Holling's work would challenge the command and control approaches to ecosystem management advocated by systems ecologists, in favour of what he would term a resilience approach. Earliest mention of the concept appeared within *Resilience and stability of ecological systems* (Holling, 1973). The paper immediately takes aim at quantitative approaches to ecosystem management, stating that the application of systems analysis to the study of ecosystems places an excessive emphasis on equilibrium which "may simply reflect an analytic approach developed in one area because it was useful and then transferred to another where it may not be" (1973: 1). Instead, questions of sustainability require a shift in "emphasis from the equilibrium states to the conditions for persistence" (1973: 2).[47]

Over the course of the article, Holling progressively outlines a new ontology of ecosystems rooted in the discourse of complex adaptive systems which will be further

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[47] In later years the distinction between stability and resilience will be re-termed 'engineering resilience' and 'ecological resilience' (Holling, 1996)

developed in subsequent work (Holling, 1986, 1996, Gunderson and Holling, 2002). Critically, Holling dismisses the idea that ecosystems organize around a single equilibrium point to which a system will automatically return following systemic shock. Rather, the particular attractor around which a system is organized represents only one of a multitude of possible states, which emerge and disappear over time. A system will continue to organize around a particular attractor given the presence of feedback mechanisms related to levels of biodiversity. The range in which a system can operate whilst organizing around the same attractor is referred to as a stability domain. Stability domains themselves evolve over time, expanding or contracting based on the size and number of these feedback loops operating around an attractor. The gradual weakening of the feedback loops operating around an attractor, for example through the loss of biodiversity within an ecosystem, can make a system more fragile and susceptible to shocks that will transfer it out of its current stability domain, towards an attractor organised around different processes. Depending on the nature of the feedback cycles within a regime, a transition may either be gradual or sudden—which accounts for the non-linear phase shifts of a system across time.

Holling was eager to emphasize the implications of this new ontology of nature for ecosystem management. He criticized efforts to protect vulnerable populations through system stabilizing approaches focused on maintaining the system in an equilibrium state. Programmes based on maintaining an optimal level of a population, such as those of Maximum Sustained Yield or protectionist policies designed to eliminate competitors and predators, have had, in some documented cases, the unintended consequences of reducing the overall resilience of a system: "a measure of the persistence of systems and of their ability to absorb change and disturbance and still maintain the same relationships between populations

or state variables" (1973: 14). Eroding the resilience of a system would leave it more susceptible to even minor external perturbations—random events such as climactic change, fire or pollution—which could flip the system into another stability domain and potentially increase the risk of wholesale species extinction (1973: 9). According to Holling, for ecosystem management "the important point is not so much how stable they are within the domain, but how likely it is for the system to move from one domain into another and so persist in a changed configuration" (1973: 10). Going further, Holling suggested that in many cases what appears to be an instability within a system, such as widely fluctuating population levels of a particular species, can in fact *contribute* to systemic resilience (1973: 16-17). Again, an overemphasis on stability within equilibrium-centred approaches should in fact be reconsidered and replaced by an approach which aimed to increase the resilience of a system through a study of the dynamics underlying its domain of attraction. In his concluding paragraph Holling characterized a resilience approach in terms of epistemological modesty, an acknowledgment of the limits of human understanding.

> A management approach based on resilience…would emphasize the need to keep options open, the need to view events in a regional rather than a local context, and the need to emphasize heterogeneity. Flowing from this would be not the presumption of sufficient knowledge, but the recognition of our ignorance; not the assumption that future events are expected, but that they will be unexpected. The resilience framework can accommodate this shift in perspective, for it does not require a precise capacity to predict the future, but only a qualitative capacity to devise systems that can absorb and accommodate future events in whatever unexpected form they may take (Holling, 1973: 21).

Over the course of his career, Holling would develop and elaborate an approach to ecosystem management focused on optimizing the conditions for persistence of a species or ecosystem by increasing its resilience. Enhancing a system's resilience can be achieved in

two ways (Holling, 1973). Firstly, one can attempt to move the system further away from a critical threshold that would send it towards an alternate attractor. However, positioning a system away from an attractor could come at the cost of systemic efficiency. Alternatively, resilience can be enhanced by expanding the stability domain around an attractor. As Gunderson and Holling (2002) have noted, this second solution—which seeks to engender resilience into a system—not only increases the capacity of a system to withstand the impact of potentially destabilizing shocks, but also permits the system to quickly and efficiently reorganise so as to capitalize on emerging opportunities. As such, resilience is not necessarily a goal itself. Rather, the goal is control over the conditions of adaptability of a system so as to heighten its adaptive, evolutionary capacity and direct its trajectory between alternate stable regimes. "Sustainability is the capacity to create, test and maintain adaptive capability. Development is the process of creating, testing and maintaining opportunity" (Gunderson and Holling, 2002). Resilience is therefore not simply a conservative exercise, but an opportunity to evolve.

More recently, researchers at the Resilience Alliance have sought to apply these ideas anthropologically to assess the comparative resilience of different cultures and societies in terms of their susceptibility to collapse and are now assessing the comparative resilience of contemporary urban centres (Resilience Alliance, 2007). Urban resilience is defined as "the degree to which cities are able to tolerate alteration before reorganising around a new set of structures and processes" (Resilience Alliance, 2007: 8). As these authors note, as resilience declines, rigid systems move closer to criticality and even smaller shocks could send them into crisis or chaos. Examining the resilience of cities as "the quintessential examples of a complex adaptive system" (Resilience Alliance, 2007: 9) consists primarily in trying to locate and

secure the conditions that enhance the evolutionary capacity, or fitness, of the system, thus securing it from potentially destabilizing shocks. As these authors note, engendering resilience into a system not only increases the capacity of a system to withstand the impact of potentially destabilizing shocks, but also permits the system to quickly and efficiently reorganise so as to capitalize on emerging opportunities (Resilience Alliance, 2007: 8).

Neoliberalism and Catastrophe-led Growth

A year after Holling's groundbreaking paper, Friedrich von Hayek was awarded the 1974 Nobel Prize in economics. In his acceptance speech, subsequently published under the title *The Pretence of Knowledge* (1974), Hayek railed against the hubris of Keynesian 'scientistism' in the context of the ongoing international stagflation crisis. Echoing Holling, Hayek charged economists with committing the 'scientistic error' of naively appropriating the mathematically rigorous models of the physical sciences without sufficient regard to the differences between the fields. The market, Hayek maintained citing prominent cyberneticist Warren Weaver to lend credibility to his assertion, displayed an 'essential complexity' which precluded mathematical modelling.

For Hayek, in such a complex field as the market, that which is important for study is rarely quantifiable. Yet, the scientific status afforded *prima facie* to quantitative studies had encouraged analysis of those factors which *can* be measured, regardless of their overall importance to the dynamics of the market. Even the positive correlation between aggregate demand and total employment may only be approximate, Hayek suggested. However, insofar

as it is the only cause for which we have quantitative data it has been taken as a scientific truth despite the fact that it may only be partial explanation of more complex processes. What may, in fact, contribute more substantially to unemployment—namely, discrepancies between distribution of demand for goods and services and the allocation of labour and other resources mandated for production—cannot be demonstrated in relation to quantitative evidence and, as a result, had been ignored by policy-makers.[48]

Just as policies of Maximum Sustainable Yield (MSY) had eroded the resilience of complex ecosystems over time, Hayek purported that Keynesian demand-management approaches have had a debilitating effect on the ability of the underlying economic system to adjust to misallocations in labour and capital—the real cause of high unemployment, according to Hayek. By pumping money into sectors of the economy which only yield temporary demand, policies of Keynesian demand-management only delay necessary structural adjustment and breed dependency on a continual flow of state-finance—both of which only serve to increase inflation. What was required was instead a qualitative approach focused on optimizing the conditions for self-organization, adaptability and growth. Hayek would characterize this approach as environmental:

> "if man is to do more harm than good in his efforts to improve social order, he will have to learn that in this and in other fields where essential complexity of an organized kind prevails, he cannot acquire full knowledge which would make mastery of the events possible. He will therefore have to use what knowledge he can achieve, not to shape the results as the craftsman shapes his handiwork, but rather to cultivate growth by providing the appropriate environment, in the manner in which the gardener does this for his plants" (1989: 7).

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[48] It is also important to note that Hayek displayed a discomfort with notions of 'equilibrium' in this speech, preferring to speak of the general conditions under which one can expect "the market to establish prices and wages at which demand will equal supply". He does not however, dismiss the idea that equilibrium exists at this point, or whether they are unique.

From his earliest writing Hayek had demonstrated a deep political animosity towards rational-planning approaches to economic management. In his 1945 *The Road to Serfdom* (2001 [1945]), arguably his most famous book, Hayek argued that the rational-planning of economies would swiftly give rise to exactly the sorts of totalitarianism which the allies had just defeated in the last war. It was through the paradigm of his own anti-socialist sentiments that Hayek would construct his own intellectual project (see Mirowski, 2007). Given the strong commitment to positivistic 'scientific methods' amongst those with socialist leanings (including the 'Tots and Quots" dining club with which Hayek would have been familiar in his time at LSE), Hayek was compelled to frame his own critique as a rejection of 'scientism'.

Hayek's rejection would draw on neo-Kantian considerations of the limits of knowledge and stress the difference between the referents of study between the social and natural sciences. The roots of this critique have been traced to Hayek's entry into a debate amongst Viennese economists in the 1920s sparked by Otto Neurath's claim that wartime experience had demonstrated the success of centralised price calculations (See Caldwell, 1997, Mirowski, 2002). In counter-response to von Mises' 1920 paper, which argued that rational planning would be impossible without market valuations, Lange would claim in *Economics Theory of Socialism* that prices could indeed be found by a central planner substituted for the mythical Walrasian auctioneer. For many critics at the time, this was impossible due to the immensity of calculations which would be required—a critique which incidentally would become increasingly less persuasive with the development of computers in subsequent years. For Hayek, however, the problem was not the immensity of the calculations required but the impossibility of locating all the variables upon which these calculations could be based. In

Individualism and Economic Order, for example, Hayek states that "the mere assembly of these data is a task beyond human capacity" (1948: 156). This idea may have been put best in the opening of *The Use of Knowledge in Society*:

> 'What is the problem which we try to solve when we try to construct a rational economic order? On certain familiar assumptions the answer is simple enough. *If* we possess all the relevant information, *if* we can start out from a given system of preferences, and *if* we command complete knowledge of available means, the problem which remains is purely one of logic. . . . This, however, is emphatically *not* the economic problem which society faces. . . . The peculiar character of the problem of a rational economic order is determined precisely by the fact that the knowledge of the circumstances of which we must make use never exists in concentrated or integrated form but solely as dispersed bits of incomplete and frequently contradictory knowledge which all the separate individuals possess. The economic problem of society is thus not merely a problem of how to allocate "given" resources . . . it is a problem of the utilization of knowledge which is not given to anyone in its totality. (Hayek as quoted in Mirowski, 1997: 236-237)

Determinations of prices and wages within a competitive market are ordered through the complex interactions of numerous market participants, each behaving in accordance with their own unique knowledge and expectations. It was the fragmented and dispersed nature of the knowledge upon which price determinations were constructed—inaccessible to observation and unquantifiable—which precluded any scientific efforts to establish equilibrium mathematically. Instead, the superiority of the market was affirmed in its ability to order prices through a process of distributed computation which could quickly and efficiently balance supply with demand and respond more rapidly to their fluctuations. The distributed self-organization of the market would be drawn upon within Hayek's foray into neuropsychology, *The Sensory Order* (1952b). Here, Hayek would outline his theory of the distributed cognition of the mind in which consciousness was an emergent product of the

complex interaction of neurons. As a result of this complexity, "the capacity of any explaining agent must be limited to objects with a structure possessing a degree of complexity lower than its own precluding the ability of the human brain to understand its own operations, as well as phenomenon displaying higher degrees of complexity such as the market" (Hayek, 1952b: 185).

The significance of the 'socialist calculation controversy' goes well beyond the merits of central-planning. For, as Mirowski points out (2002: 235), it was in the context of this debate that the market becomes, for the first time, conceptualized as an information-processor, rather than its more traditional treatment, still evident within microeconomics textbooks, as a vehicle for the distribution of scarce goods and services. In reframing the market around information flows, rather than the more material flows of goods, services, labour and capital, the door was opened to the application of the insights of cybernetics into the field of economics. Despite his earlier criticism of "slavish imitation of the method and language of science" (1952a: 15) by economists, Hayek would begin to actively draw upon the discourses of cybernetics to refine his own model of the market, and give it intellectual credibility.

Hayek would increasingly turn to theories of evolution and biologistic metaphors to account for the emergence and ineffability of the market (Hayek, 1994 [1964], Hayek, 1988). In the latter years of his career, Hayek would further entrench his own project within the discourse of the complexity sciences, turning away from notions of market equilibrium in order to describe the production process in terms of a series of flows beset by perpetual turbulence "constantly adjusting the production process to the complexity of the capital structure, with streams of value coursing down an ever-changing river bed"(Hayek quoted in Cooper and Walker, 2011). By *The Fatal Conceit* (1988) Hayek would be openly mobilizing

the discourse of the complexity sciences. Here Hayek discussed how studies of "autopoesis, cybernetics, homeostasis, spontaneous order, synergetics, and systems theory" (Hayek, 1988: 9) on 'complex self-maintaining orders' have helped to articulate his conception of the market and highlight the "demonstrably false premises" upon which socialism was based (Hayek, 1988: 9).

Characterizing this diagram of governance as 'environmental', Hayek would invoke the nature of the market, in classical liberal fashion, to discourage interventionist state policies which might interfere with inherent processes of self-organization. However, in conceptualizing the market in terms of an open, complex adaptive system Hayek would draw upon a fundamentally different understanding of nature than that which had been classically conceived in both the fields of Political Economy and Ecology. For Hayek, the complexity of the market required a displacement of government efforts from intervening upon the processes of the economy itself to optimizing the conditions for self-organization and adaptive evolution. As an open, complex system the economy evolved most effectively in far from equilibrium conditions and productively when liberated from the stagnating control of the interventionist state. As open systems, local economies, rather than being shielded from the wider economic environment through state finance, would need to be opened to it, in order to allow processes of adaptation and co-evolution to operate. Scholarship, in turn, would need to be conducted with requisite epistemological modesty, identifying the qualitative conditions in which the self-organization of the market is optimized.

Environmentality and the Government of 'Natural' Systems

In his Nobel Prize speech, Hayek targeted the Club of Rome's report on *The Limits to Growth* (Meadows et al., 1972) as demonstrative of the status afforded to dubious science which transgressed the limits of what it could rightfully determine (Hayek, 1989: 6). The report had received significant attention in light of its provocative thesis that the sustainability of exponential economic growth was untenable, with the limits to this trajectory likely to be reached within the century. The MIT research group behind the report applied systems analysis to computer models to extrapolate the interaction between population growth, industrialization, pollution, food production and resource depletion over time. Altering these variables across a range of possible future scenarios the MIT team concluded that the rate of depletion of the finite resources upon which industrial economies were based raised significant concerns about the limits to economic growth. Echoing the prescription of Howard Odum, the report suggested that "it is possible to alter these growth trends and to establish a condition of ecological and economic stability that is sustainable far into the future" (Meadows et al., 1972: 24) if economic growth was engineered along sustainable lines within a steady-state economy which respected ecological and biotic equilibria.[49]

While the report received ample criticism based on its data, methods and conclusion, perhaps the most interesting of criticisms would capitalize on Hayek's rearticulation of the economy as an open complex system. Daniel Bell, in his book *The Coming of the Post-Industrial Society* (1974), criticised the studies quantitative methodology premised on the

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[49] For a discussion of the Report see (Cooper, 2008, Cooper and Walker, 2011)

model of a 'closed system' which failed to appreciate the potential for qualitative systemic change which marked the evolution of economic systems. As a complex open system, multiple possibilities for the organization of an economy are possible. While currently organized as an industrially-based system dependent upon finite energy resources, the economy could be reorganized around a different attractor where resources are increasingly abundant. For Bell, what was required was a transition from an industrial economy organized on the consumption of finite natural resources, to a post-industrial knowledge economy grounded in the bottomless resource of the creativity of the human mind. An information society, premised not only on advances in science and technology for the innovation required to transition between successive phases of capitalist order, but one in which information is the primary product. Problems of scarcity besetting industrial economies would be terminated given information's special status as a resource which is non-consumable, non-rivalrous and with zero marginal cost of production. From its roots in ecological sustainability discourses, a figure of nature as complex open system would be mobilized to undermine the claims of environmentalists as to the pressing need to adjust our patterns of production and consumption in line with the limits of the biosphere.

In *The Birth of Biopolitics,* Foucault would recognize the singularity of the 'environmental technology' operationalised within a neoliberal governmentality (2008: 259). These techniques, he would stress, were not the equilibrium-based mechanisms of disciplinary society based on a "standardizing, identificatory, hierarchical individualization. (Foucault, 2008: 261)." Rather, this is the

> "image, idea, or theme-program of a society in which there is an optimization of systems of difference, in which the field is left open to fluctuating processes, in which minority individuals and practices are tolerated, in which action is brought

to bear on the rules of the game rather than on the players, and finally in which there is an environmental type of intervention instead of the internal subjugation of individuals. (2008: 259-60)"

The advent of environmental technologies coincided with the "massive withdrawal [of] the normative-disciplinary system" (Foucault, 2008: 260). This is not a programme of standardization utilizing disciplinary technologies to structure the mentality of individuals in accordance with an ideal normality. Nor is it a programme of biopolitical regulation operating on the 'generality' of aleatory events which, though unpredictable in their individual occurrence, display a constancy at the mass-level of the population in relation to which regulatory mechanisms could be introduced to "to establish an equilibrium, maintain an average, establish a homeostasis, and compensate for variations within this general population and its aleatory field" (Foucault, 2003: 246). The idea of fixed norms and 'natural' equilibria, at the level of the individual and the population, are dispensed with entirely for an "environmentalism open to unknowns and transversal phenomena" (Foucault, 2008: 261). Foucault's lecture notes conclude with a provocative question: "But does this mean that we are dealing with natural subjects? [*end of manuscript*]" (Foucault, 2008: 261).

If environmental technologies operated in relation to a 'natural' subject this was not to suggest either that they proceeded from a more objective rendering of the political subject or that they are involved with emancipating the subject from processes of political subjectification. Rather, it was recognizing that population was itself now understood within the same 'natural' figure of the environment—characterized by non-linear emergent self-organization. This re-conceptualization would have implications for liberal governance. Ensuring the subject is capable of co-evolution with their environment cannot be achieved by

structuring the mentality of the subject, but was to proceed by acting on the subject's environment, understood as an incentive structure and thus a condition of possibility for emergent norms and behaviours. Security could thus no longer attempt to protect the subject from threat if this meant closing them off from their milieu. Instead, security would have to proceed by exposing the subject more fully to their environment so as to optimise its governmental effects in encouraging innovation and, crucially, adaptation.

Conclusion

Jackie Orr identified that by the 1970s sociological studies of panic appeared far less frequently and were being displaced by mounting psychological research on 'panic disorder': a condition characterised by recurrent panic attacks (a sudden, uncontrollable onset of intense fear often accompanied by hyperventilation, perspiration, nausea, dizziness and heart palpitations) triggered by no observable cause (2006: 172-175). Assisted by Quarantelli's rigorous, but ultimately far narrower, definition of panic in terms of flight (Quarantelli, 1954, Quarantelli, 1957), the very idea of panic was itself being transformed alongside the general trend towards cybernetic thinking taking place within American sociology. No longer understood in terms of irrational hysteria, panic was now taken to be an adaptive response exhibited by a minority of individuals within a position of perceived entrapment (Quarantelli, 1954). Combating this behavior required opening communication channels and assisting participants by providing them with information upon which to base their decisions,

At the turn of the twenty-first century, even stronger assertions that panic is a 'myth' (Clarke, 2002, Cocking et al., 2009, Johnson, 1985, Keating, 1982, Sheppard et al., 2006, Tierney, 2003, Wessely, 2005b) have been drawn on to advance, and legitimize, a significant restructuring of emergency planning and response logics (Challenger et al., 2010a, 2010b). The resilience strategies of the UK Civil Contingencies Secretariat, which will be discussed in detail in the following chapter, have been advanced, and legitimized, on the basis of this reappraisal of the referents of governance. Departing from 'command and control' approaches to emergency response (Dynes, 1983), resilience strategies seek to optimize the 'natural' self-organizational capacities of populations in emergency to collectively organize responses to crisis. In broadening the scope of investigation this chapter has sought to problematise the idea that resilience was a simple discovery by disaster researchers of a natural phenomenon. It does so by situtating the emergence of the conceptual object of resilient populations within wider transformations in the order of power/knowledge underpinning liberal goverannce.

Rather than an object whose true essence was suddenly discovered by science, resilient populations might instead be understood as the correlative of a neoliberal governmentality. This genealogy of resilient populations has sought to locate the conditions under which such a conceptual object could emerge. It suggests that this shift in the understanding of social behaviour during emergencies is better understood as the *effect*, rather the cause, of a broader restructuring of rationalities and practices comprising liberal governance. Investigating correlated developments within the fields of Political Economy and Ecology this genealogy showed how the emergence of resilient population coincided with a profound shift in the understanding of the nature of Nature away from the classical equilibrium models dominant since the co-constitution of these academic fields. In adopting the discursive framework of the

complexity sciences, both Political Economy and Ecology would adopt an understanding of Nature composed of multiple, emergent equilibria which exceeded science's capacity both to represent them in models and predict the trajectory of their evolution. Moreover, indissociable from this emergent ontology, a programme of governance would be constructed displaying both continuities and discontinuities with a liberal governmentality historically concerned with the problematic of 'governing too little, or too much' (Foucault, 2007) the immanent self-organizing processes of natural fields including, most importantly, the market. The emergence of this regime of truth therefore facilitated the synthesis of techniques of governance, explored in the previous chapter, into a more general governmental discourse.

'Resilient populations' are not a natural phenomenon. They are the product of culturally and historically specific processes of speciation. Resilience discourses gained validity to the extent that they resonated with neoliberal attempts to problematise social liberalism on the basis of its cultivation of dependence. Protection, insofar as it reduces one's exposure to these events, breeds dependence and fragility. As a programme of governance, neoliberalism enacts a novel speciation of life in which life is valued in relation to its capacity to adaptively self-organize in the face of crisis. Crises are not to be protected from because they are reconceptualised as opportunities for growth and transformation. Crises become necessary, as opportunities to develop and exercise those faculties associated with resilience. It is not that crises cannot be prevented, it is that they should not be entirely prevented. In the process, security is newly understood in terms of the capacity to adapt to environmental conditions so as to live with, and profit from, turbulent worlds. Security becomes a project of perpetual atelic adaptation, and self-transformation within an ever-evolving milieu.

This genealogy has sought to identify the conditions of emergence for such a conceptual object not in the advance of science, but in the ascendance of neoliberalism as a regime of governance. In doing so, it has sought to provide a positive basis for a theorization of neoliberalism as a regime of governance, constituting a particular actualization of an emergent epistemological order. While neoliberalism demonstrates certain similarities with classical liberalism, including the emphasis on the 'natural' status of the market, this chapter has stressed that it is more than simply a reassertion of this governmentality or an extension of this programme to the public sphere. What differentiates neoliberalism from classical liberalism is its affiliation to an account of 'the order of things' (Foucault, 2002) characterized by non-linear processes of emergence. In the following chapter we will see how this order of governance and its attendant account of the 'order of things' was adopted and refined in the context of liberal security initiatives.

Chapter 4

Securing Emergence

> It may be that war as strategy is a continuation of politics. But it must not be forgotten that 'politics' has been conceived as a continuation, if not exactly and directly of war, at least of the military model as a fundamental means for preventing civil disorder.

> (Foucault, 1977: 168)

In early 2001 a major civil contingencies review was ordered by the Blair government. The immediate impetus for the review came from of a number of high profile domestic crises, including the fuel protests, an outbreak of foot and mouth disease and a series of flooding incidents. However, the review also reflected an acknowledgement that broader changes to the security environment needed to be reflected in the civil contingencies machinery. Most notably, the collapse of the Soviet Union had removed the threat of attack by conventional or nuclear weapons which had been an increasingly central preoccupation for emergency planning over the course of the Cold War (see Chapter Two). While limited reforms were introduced by Conservative governments in 1989 and 1991 to begin to address shifts in the strategic environment (Smith, 2003: 410) the political impetus for a substantial restructuring of the organizational and legislative basis of UK civil contingencies would only be afforded in the wake of these domestic crises and the questions they raised regarding the capacity of

Central government to coordinate multi-agency responses to the 'complex emergencies' and 'new security challenges' of a post-Cold War world (Smith, 2003: 414).

The Emergency Planning Review was initiated in February 2001 and would be completed in October of that year. In particular, the review sought to define the statutory framework for national, regional and local responsibilities with regard to crisis management and update the legislative basis for emergency planning, which continued to be based upon essentially war-time Civil Defence considerations of the Cold War (Smith, 2003: 414). Coinciding with the review, in July 2001, responsibility for civil contingency planning was transferred from the Home Office Emergency Planning Department to the Cabinet Office's Civil Contingencies Secretariat (CCS) in a move designed to streamline channels of responsibility and control during an emergency. It was therefore prior to the final completion of the Emergency Planning Review and whilst the Civil Contingencies Secretariat was still very much in its formative phases, when the events of September 11th 2001 occurred. The newly constituted Civil Contingencies Secretariat was quickly absorbed into the UK's anti-terrorism strategy as terrorism emerged as the dominant focal point of international security discourses (Coaffee, 2003, Coaffee et al., 2009).

However much 9/11 served to consolidate security discourses around the threat of international terrorism it did not precipitate a radical break in the discursive structure of (in)security imaginaries. Indeed, the impetus given to both the Emergency Planning Review and the concurrent Ministry of Defence Strategic Defence Review (Ministry of Defence, 2002) signal the extent to which the post-Cold War security environment was already being problematised in terms of its specific dangers and uncertainties. While the graphic terrorist attacks on New York and Washington certainly gave political urgency to the transformation of

the United Kingdom's security institutions, these events served only to consolidate an already emergent security discourse rooted in the problematic of the radical uncertainty of contemporary threat. 9/11 was not wholly exceptional (Lundborg, 2012) because it was itself interpreted through a grid of intelligibility which was already cohering. These dramatic events would nevertheless serve to consolidate and extend this template as a means of problematising the post-Cold War security environment in terms of its radical contingency.

This chapter investigates the operationalisation of resilience strategies within UK Civil Contingencies management in relation to this security discourse and, in particular, the problematic of the radical contingency of contemporary threat. It begins by outlining how this problematic emerges in concert with transformations in the biopolitical imaginary of 'the social'. The introduction and widespread adoption of concepts such as the 'network society' was testament to the widespread sentiment that profound changes were occurring in the social order of liberal states. The 'network society' was one mode of a more general ontopolitical rendering of liberal populations as complex open systems. It is in the context of these transformations, and in particular specific problematisation of liberal life which issued from this speciation, that a machinery of governance, still rooted in the logic of protection, was itself problematised. This problematisation is investigated in detail below as the condition under which strategies based on the concept of resilience could be trialled, refined and applied to the field of emergency governance.

Resilience strategies did not suddenly materialize as a response to this problematic however. They too have a history. This chapter seeks to trace the development of these techniques to show how the diagram of governance outlined in the previous chapter was actualized within the security field. It is argued that resilience strategies have a genealogy that

can be traced to innovations in warfare associated with the Revolution in Military Affairs (RMA). Building on developments already underway in the organization of American business enterprises and infusing them with models and concepts drawn from the complexity sciences, the RMA initiated a transformation in military organization and strategy which championed communications infrastructure as a condition of possibility for militaries organized on the idea of rapid and perpetual transformation (Blank, 1997, Cebrowski and Gartska, 1998). Rapid adaptability, enabled by networked communication infrastructures which exacerbated information exchange, was a means of responding the problematic of radical contingency of twenty-first century warfare (Cebrowski and Gartska, 1998, Wesensten et al., 2005). The RMA acted as the principle site for the assembly of governmental rationalities and practices later transferred to the civil contingencies operations for the purpose of responding to civil emergencies which was enabled by the sharing of a common problematic of radical contingency.

Identifying the military genealogy of resilience strategies is not undertaken for the purpose of setting up an easy denouncement of these strategies based on the 'militarization' of the civilian sphere (Coaffee, 2003, 2009, Coaffee et al., 2009, Davis, 1992, Nunn, 2001, Wæver, 1995). The limitation of such approaches is that they imply an expansive military essence which constantly threatens to colonize the civilian sphere. As will be elaborated upon below, the RMA was itself inspired by developments in liberal economies problematising any linear claim of influence. The transformations in military and social order are better analysed as symbiotic rather than unidirectional. Secondly, given the long historical influence of military models, concepts, strategies and logics on governance and the design of urban spaces (Chapter 1, Foucault, 1977, 2007, Scott, 1998: 59-63, Graham, 2004) the charge that the

civilian sphere is becoming 'militarized' lacks much analytical purchase. In recognition of the 'revolutions' to which the organization and strategy of war is periodically subject (Bousquet, 2009) the more critical question may be: "What is the nature of the contemporary security discourse informing military and social transformations alike?"

Rather than a blanket denouncement then, this chapter seeks to elucidate through historical analysis the discursive structure informing transformations in both military and security operations. As such, this chapter is interested in tracing not simply how resilience was operationalised as a programme of governance, but the conditions of possibility for it to emerge as a security value. This chapter is concerned with how the epistemological order outlined in the previous chapter was extended to the domain of security through the migration of practices and associated governmentalities. Investigating the martial origins of resilience strategies operating in UK civil contingencies provides a framework upon which the politics of resilience can be subject to further theorization and criticism in chapter 5.

The Contemporary Threat Environment:

The advent of the Cold War was met with substantial changes in the underlying discursive structure of the (Anglo-American) disciple of International Relations. Whereas the advice provided to statesmen had traditionally been rooted in the anecdotal wisdom of History, by the 1960's History was being actively displaced by positivist analytical frameworks drawn from the Natural Sciences and Economics which were claimed to be more scientifically rigorous (see Waltz, 1959, 1979). The application of behavioural science, systems analysis

and games theory not only within the increasingly dominant discourse of scientific realism, but to doctrines of deterrence, breakdown and mutually assured destruction (MAD) alluded to the common investment shared by scholars and statesmen alike in the ability of scientific methodology to enhance predictive capacity (Waltz, 1979). The abrupt and unexpected end of the Cold War called into question the continued suitability of the dominant paradigm through which global politics had come to be understood and conducted for the previous half century (Kegley, 1993). It also precipitated a crisis of confidence amongst those whose positivist theories of global politics were unable to foresee the unexpected collapse of the Soviet Union (Gaddis, 1992, Lebow, 1994, Wohlforth, 1994).

The radical transformation of the international political landscape paired with the problematisation of the very paradigm though which international politics was understood and conducted for a half-century opened a space for theorization and debate over how to understand the nature of global politics within a post-Cold War international system. One prominent line of thought centred on the significance of 'globalization' in determining the shape of the emergent global order (see Clark, 1999, Held, 1999, McGrew and Lewis, 1992, Rosenau, 1997, Weiss, 1998). Though notoriously difficult to define, globalization generally referred to the exponential increase in the circulation of people, money, ideas, goods, services, diseases and information enabled by advances in technology and the spread of neoliberal economic and political doctrines, as well as the new forms of connectivity and exclusion engendered by these processes. The acute sense that the very organizational structure of 'the social' was mutating under the assemblage of forces associated with globalization was given academic form within influential sociological literatures declaring the advent of the

'information' (Webster, 1995) or 'network society' (Berkowitz and Wellman, 1988, Castells, 1991, 1994, 1996).

The idea of the network society is related to, but goes beyond, the notion of the information society which stresses the growing size and importance of information flows to contemporary societies (Webster, 2006). For Castells "[n]etworks constitute the new social morphology of our societies" (Castells, 2010: 500). The network society refers not just to the growing reliance upon infrastructural networks which support modern forms of liberal life, but to the complex of interlinked and interdependent networked structures through which 'the social' is increasingly organized. Castells notes that "[w]hile the networking form of social organization has existed in other times and spaces, the new information technology paradigm provides the material basis for its pervasive expansion throughout the entire social structure" (Castells, 2010: 500). Drawing on the work of post-industrialists including Daniel Bell and Alain Touraine, Castells explains that the network society emerged as a result of structural transformations in the order of global capitalism proceeding from the international economic crises of the 1970's which, enabled by the emergence of new information technologies, had by the 1980's given rise to a 'techno-economic system' which he labels 'informational capitalism' (Castells, 2010: from 18). Castells argues that the marrying of informational networks and networked forms of organization provides returns on speed, flexibility and adaptability:

> "Networks are appropriate instruments for a capitalist economy based on innovation, globalization, and decentralized concentration; for work, workers, and firms based on flexibility and adaptability; for a culture of endless deconstruction and reconstruction; for a polity geared toward the instant processing of new values and public moods; and for a social organization aiming at the supersession of space and the annihilation of time" (Castells, 2010: 502).

In the revised preface to the 2010 edition of *The Rise of the Network Society* explains the impetus behind this new form of social organization in terms of the management of contingency:

> …while networks are an old form of organization in the human experience, digital networking technologies, characteristic of the Information Age, powered social and organizational networks in ways that allowed their endless expansion and reconfiguration, overcoming the traditional limitations of networking forms of organization to manage complexity beyond a certain size of the network. (Castells, 2010: xviii)

Castells recognized that these transformations would impact not just the way in which societies organized, but how life was itself experienced. Echoing many within globalization literatures, Castells spoke of these developments in terms of spatial contraction and temporal acceleration (Castells, 2010: xxxi-xliii).

The idea of the network society represents a profound reimagining of the social order premised not just on a novel *understanding* of 'the social' but on the idea that social ontology was itself mutating under the correlated forces of communications technology and informational capitalism. Here, as elsewhere (Barabasi, 2002, Latour, 2005, Galloway and Thacker, 2007), the network emerged as a dominant trope for speaking about a form of order which had emerged to cope with, manage and, when possible, harness complexity. Complexity here is understood as a function of heterogeneous circulations and connections such as those circumscribed within transnational processes of globalization which give rise to non-linear and unpredictable systemic behaviours. The social order particular to the 'network society' is one discursively rooted in the sciences of complex emergence: an order which recognizes contingency not simply as an irreducible condition of operability, but also a condition of

possibility (Dillon and Reid, 2009: 122). Form is understood here as a temporary, contingent actualization of heterogeneous relations due to be continually re-ordered within an atelic project of perpetual *becoming*. In this sense it is clear that the significance of this particular ontologization of 'the social' cannot simply be attributed to its networked *forms:* the growing importance of material networks such as those critical infrastructures said to be 'essential to life' or even to the proliferation of networked organizational forms. Rather it is the adaptive mutability of organizational form enabled by these infrastructural and organizational networks.

Clearly the very idea of order expressed here is distinct from a Christian onto-theological understanding of a universal, stable form divined by God to secure against evil. It can also be distinguished from a modern understanding of order which, in a clear mutation of the Christian onto-theological understanding of order to which it was indebted, sought to establish a stable edifice (Reason, the State) to guard against danger in the absence of God (Bauman, 1992, see also Caygill, 1993). The order particular to the network society is a dynamic one. It is characterized by the precedence placed on adaptive mutability to environmental conditions: a particular actualization of the epistemological order outlined in the previous chapter. As such, the network society might better be treated as a popular shorthand for a specific speciation of life understood in terms of its capacity for complex emergence (Dillon and Lobo-Guerrero, 2008, 2009).[50] The contemporary liberal imaginary of species-life is distinguished by its fascination with the morphological order animating species-being. As clearly evidenced in formulations of the network society, species-being is

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[50] Other studies would more explicitly deploy the discourse of the complexity sciences for sociological purposes. See for example (Byrne, 1998, Chorafas, 1994, De Landa, 2006, Marion, 1999, Urry, 2003)

understood, and evaluated, in terms of its capacity to thrive within conditions of radical contingency through constant, rapid adaptation to environmental conditions.

Just as any imaginary of danger is an expression of a particular understanding of order (Campbell and Dillon, 1993: 4), the advent of the network society has likewise been understood to herald new dangers. Coinciding with the benefits which international telecommunications networks and just-in-time transportation networks are said to deliver is an acute recognition of their vulnerability to disruption by accident or attack (Adey et al., 2011). Bonditti (2008) shows how in the early 1990's a concern with the threat of cyber-attacks on information and communication networks increasingly relied upon by the US government reprioritized critical infrastructure protection in the context of threats which targeted not just the material dimensions of networked infrastructures but their virtual dimensions as well. It has been here noted that the status afforded to critical infrastructures as key enablers for liberal life (Lobo-Guerrero, 2009) has made them particularly vulnerable as symbolic targets for attack (Burgess, 2007, Reid, 2008a). These vital circulations were not just vulnerable to disruption by threats acting upon the virtual or material dimensions of these infrastructures however. They could also be exploited by other networked communities from viruses (electronic and biological) to international terrorists (relying, for example, on financial, telecommunications and transport infrastructures) as a means of radically amplifying their own processes of emergent development and adaptation. As such, the very same circulations understood to accelerate the evolutionary adaptability of liberal forms of life could also be harnessed to radically empower an assortment of forces deemed inimical to liberal life. In addition then to the physical security of these networks and a continual surveillance to distinguish 'good' from 'bad' circulations (Foucault, 2003: lecture 11, Lobo-Guerrero, 2008)

so as to promote the former and discourage, if not eliminate, the latter, contemporary security initiatives must keep a close watch over the differential forms of life enabled by the exacerbation of these circulations in respect of the threat of their 'becoming-dangerous' (Dillon, 2007).

To make matters worse, the complex interactions of networked systems are understood to further exacerbate the dangers inherent to the network society. Drawing on systems theory and organizational analysis, Charles Perrow's *Normal Accidents* (1999) investigated the forms of systems failure responsible for large-scale industrial catastrophes including the 1979 Three Mile Island nuclear meltdown. In contrast to Perrow's ill-chosen title, the study focused primarily upon low-probability, high-impact events which Perrow labels 'system accidents'.[51] System accidents deviate from the two modes in which industrial accidents have historically been conceived and managed: either as a result of negligence (mobilizing processes of adjudication to ascribe 'fault') or as a result of statistical regularity (enabling technologies of workplace insurance) (See Ewald, 1986: Introduction). Instead, a system accident is a function of the 'interactive complexity' of tightly-coupled complex systems rather than operator error or component malfunction. In other words, system accidents are inherent to the complex interdependence of components within a system. Within tightly coupled systems, discrete failures located within one sub-system can rapidly cascade within and across sub-systems. The complex interaction of multiple, distributed failures may, in turn, give rise to the non-linear emergence of a catastrophic system accident. The accident cannot be geographically localised to enable a denunciation of 'responsibility' or 'fault'. Rather, the accident is itself distributed: a function of complex interdependence of components in relation.

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[51] Perrow refers to 'systems accidents' and 'normal accidents' interchangeably throughout this text. To avoid confusion, I will refer to these only as 'systems accidents'.

Within these systems, too rigid a focus on systemic stability may in fact exacerbate processes associated with the complex emergence of danger, generating even greater insecurity (Law, 2000). Wildavsky (1988), for example, has suggested that too many safety measures can be counter-productive—stifling opportunities for innovation and creativity within a crisis. By contrast, an approach rooted in resilience would concentrate on enhancing the ability to respond to unexpected dangers. The radical contingency of contemporary threat thus does not only refer to the fact, as we are continually reminded, that it is a question of when, not if, the next emergency will occur. It is a matter of the non-linear, and thus unpredictable, evolution of danger's emergence.

Bruce Mann, Director of the Civil Contingencies at the Cabinet Office, explained the 2001 constitution of the UK Civil Contingencies Secretariat (CCS) as a response to the forms of threat particular to a 'network society':

> "There has, since 2001, been a fundamental shift in the purpose and organisation of civil protection in the UK. The Cold War model of civil defence – focused on a single, monolithic threat, managed top-down by central government in secret and restricted to a small community – has gone. In its place has come a model better suited to a modern network society with its increased connections and interdependencies bringing with them greater vulnerability to external shock. The new model addresses a wide range of security risks, from terrorism through accidents to natural disasters. It involves a broad range of organisations, in the public sector and beyond. Work at local level is the building block of preparedness. And there is a premium on inclusiveness and transparency." (Mann, 2007)

The very openness and connectivity which is the source of dynamism in the network society thus radically endangers it. Moreover, these attributes problematise security logics of protection which look to seal off the outside given that the openness of these systems is a

151

condition of their adaption to environmental transformations. Resilience has thus emerged as a response to this problematic premised on the security of open complex systems including contemporary 'network societies'. The military genealogy of resilience strategies will be explored in the following section.

Transformation: The Revolution in Military Affairs

From the mid-1990's the Revolution in Military Affairs (RMA) has served as the guiding strategic vision for the re-organization of liberal militaries to better respond to the forms of threats anticipated within a post-Cold War strategic environment. Premised on a shift from the weapons platform to the information network as the central organizing principle for all levels of military command and control, the RMA elevated the real-time, circulation of information through communications infrastructures to a condition of possibility for inciting flexible, adaptive and more closely integrated forms of organization across the armed forces (Cebrowski and Gartska, 1998). Inspired by doctrines of Network-Centric Warfare (NCW) which sought to apply developments associated with the 'information revolution' to the battle field, the RMA sought to extend concepts of informationally-driven self-synchronization and bottom-up self-organization to all aspects of military organization. In contrast to the top-down, hierarchical forms of control traditionally associated with the military, the RMA reflected an idea of military order rooted in bottom-up self-organization enabled by real-time information sharing. The RMA, as Dillon and Reid have noted, would not simply exploit developments in communications technology, but would mobilize information itself as "the generative

principle of formation for all aspects of military organization" (2009: 112). Openly indebted to ideas of transformational organization already operationalised within American business enterprises, but infusing them with insights drawn from the complexity sciences, the RMA would be instrumental in translating the emergent order informing the transformation of liberal capitalism into security discourses.

While the roots of the RMA have been traced to Soviet military research on information-based warfare in the 1970's and 1980's (Fitzgerald, 1994, Pantelogiannis, 2006), by the 1990's American military universities and private research institutions were busy researching how developments associated with the 'information revolution' might be harnessed to respond to changes in the international strategic environment (Dillon and Reid, 2009: 112-113). At the forefront of this research was the RAND Corporation, an American think-tank which since the 1950's had exerted a significant influence over US military strategy and which was instrumental in formulating the American doctrine of Network-Centric Warfare (NCW). In 1997, the RAND Corporation published the collection *In Athena's Camp* (1997) which brought together a group of authors to discuss how the 'information revolution' was actively reshaping the nature of conflict—including warfare, terrorism and crime—and how these developments might be harnessed by the American military into the future.

Particularly inspired by transformations already well underway within the organization of liberal economies, strategists sought to incorporate the core organizational models and strategies adopted by commercial enterprises to enhance their competitive advantage within highly competitive and dynamic business environments. Stephen Blank (1997) argued that state militaries would need to learn to adopt highly adaptive networked organizational forms invented and increasingly utilized by transnational corporations which operationalised

Information and Communication Technologies (ICT) to enable constant adaptive organizational transformation to optimize the ability to mitigate risks and capitalize on emergent opportunities within rapidly evolving economic ecosystems. Editors Arquilla and Ronfeldt (1997), echoed these sentiments insisting that these shifts in organizational form towards more dispersed, networked forms of organization would be necessary for state militaries to engage in irregular forms of conflict such as guerrilla warfare and terrorism with adversaries who in many ways had already begun to adopt, and begun to perfect, strategies of 'netwar'. While preserving the hierarchical forms of organization 'at their core' states would need to become increasingly adept at 'combin[ing] hierarchical and networked designs to increase their agility and flexibility for field operations" (Arquilla and Ronfeldt, 1997: 5)

In later work, Arquilla and Ronfeldt would continue to exploit advances in networked forms of organization to theorize new military doctrines including 'BattleSwarm' (Arquilla and Ronfeldt, 2001). Drawing on the study of swarming tactics performed by ants, bees, and antibodies (2001: 25-27), but noting that highly sophisticating swarming techniques were already being utilized by 'social swarmers' including hackers and WTO activists (2001: 50), Arquilla and Ronfeldt theorized the doctrine of swarming: a particular instantiation of network-centric warfare based on the "systematic pulsing of force and/or fire, by dispersed interneted units, so as to strike the adversary from all directions simultaneously" (2001: 8). Swarming, it is noted, is premised upon "radical changes in current military organizational structures" (2001: vii) with command and control authority considerably devolved to units themselves. Swarming tactics are optimized when operationalised by small bands of troops fit with sensors so as to generate information and networked so as to share this information

instantaneously with each other and local assets. When performed successfully, swarming induces the effects associated with shock and awe:

"The ultimate aim of a swarm may be less the physical destruction of an enemy—although much damage can be done—and more the disruption of its cohesion. Once deeply disrupted, the enemy will lose his ability to maneuver or fire effectively, and the military aims of the "swarm force" will come readily to hand." (Arquilla and Ronfeldt, 2001: 23)

Given the dependence of swarming upon communications infrastructures, ensuring the robustness and resilience of these infrastructure is recognized as a significant security imperative especially given the increased likelihood of attacks on these infrastructures into the future (2001: 45-46).

Doctrines of Network-Centric Warfare functioned as sites for the generation of concepts, tactics, practices, and diagrams of governance which would inspire broader developments in the restructuring of military institutional organization collectively referred to as the Revolution in Military Affairs (RMA). The Revolution in Military Affairs was announced as the operational framework upon which post-Cold War American military would be reorganized in *Joint Vision 2010* (United States Department of Defense, 1996).[52] The report identified information and communications technologies as a means of enhancing integration and cohesion of various segments of the US military in a post-Cold War strategic environment which lacked a central strategic focus since the collapse of the Soviet Union. In a time of

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[52] The report was commissioned for the Secretary of Defense by the Roles and Missions Commission as mandated within the 1986 Goldwater-Nichols Department of Defence Reorganization Act which required such a report every three years.

decreasing defence budgets, advocates of the RMA benefited from the claim that savings could be made through the substitution of manpower with technology as informational superiority would be the key to military success into the future, rather than masses of personnel, equipment, and weaponry. However, they also noted that a true commitment to the doctrines of the RMA would necessitate changes in military structure, equipment, training and organization, provoking significant controversy within the military establishment (Barnett, 1999, Blaker, 2007).

In a paper co-written with John Gartska entitled *Network-Centric Warfare: Its Origin and Future* (1998) the principal architect of the RMA C. Arthur Cebrowski outlined the schema upon which the RMA was to be based. The authors stressed the importance of social and technological changes which prefigured the RMA. They singled out as particularly significant the structural reorganization of American businesses coincident with the exponential growth of the information technology sector:

> Here at the end of a millennium we are driven to a new era in warfare. Society has changed. The underlying economics and technologies have changed. American business has changed. We should be surprised and shocked if America's military did not. (1998: 1)

Citing Clausewitz, the authors made clear the co-evolution strategies aimed at generating profit with those tasked with providing security: "nations make war the same way they make wealth" (1998: 2). Inspired by socio-economic developments already well under way, military theorists would look to further refine this model by applying the insights of the complexity sciences: the science behind self-organizing evolutionary systems (Cebrowski and Gartska, 1998, Moffat, 2003).

"Network-centric operations deliver to the U.S. military the same powerful dynamics as they produced in American business" (Cebrowski and Gartska, 1998). The competitive advantage yielded to network-centric operations is primarily afforded to enhanced speed of command. Speed of command is premised on informational superiority translating into decisional superiority. Informational superiority refers to the enhanced understanding of the battlespace achieved through the use of a range of sensors, displays and modeling software. A resilient telecommunications is relied upon to circulate this information and facilitate communication leading to shared situational awareness amongst all contributing parties. Shared situational awareness facilitates bottom-up organization, or 'self-synchronization', and accelerates the completion of complex tasks, which can be achieved concurrently rather than sequentially. Within a rapidly evolving battle 'ecosystem' characterized in complex, emergent terms, informational superiority is recognized as the key to inciting the continual adaptation necessary to defend oneself from emergent risks, and capitalize on emergent opportunities. "Military operations are enormously complex, and complexity theory tells us that such enterprises organize best from the bottom-up" (Cebrowski and Gartska, 1998). Rather than a battle of attrition, the schema of network-centric warfare is designed to overwhelm the enemy by quickly and decisively foreclosing, or 'locking-out', enemy courses of action, shocking them into capitulation.

Cebrowski and Gartska recognize that self-synchronization represents a significant departure from traditional command structures in which "military commanders work to obtain top-down command-directed synchronization to achieve the required level of mass and fires at the point of contact with the enemy" (1998). But the RMA also signifies a fundamental reimagining of military order. Static hierarchical command and control structures were to be

replaced by evolving organizational structures designed to rapidly respond and adapt to an ever-changing battle-ecosystem. Enacting perpetual processes of ordering within an atelic project of continual 'transformation' would optimize the capacity to exploit emergent opportunities and mitigate risks. When Dillon and Reid insist that contingency has become not simply as a condition of operability, but a condition of possibility for contemporary military and security discourses (2009: 122), they are alluding to the ways in which contemporary biopolitical governance is increasingly concerned not only with the government *of* contingency within an ineradicable 'fog of war', but how to govern *through* contingency (Dillon, 2006) by learning how to manipulate and control the conditions of adaptive emergence for species-life.

The adoption of network-centric operations demanded a significant reorganization of military governance away from disciplinary models focused on enhancing the robustness of static organizational forms to ensure predictability on the battle field. The extent of these changes was stressed by Donald Rumsfeld, a strong advocate of the RMA, in a speech to the National Defence University. The advent of high-tech weaponry, he argued, "will not transform the US Armed Forces unless we transform the way we think, the way we train, the way we exercise and the way we fight" (as quoted in Dillon and Reid, 2009: 110). As Cebrowski and Gartska recognize, they would also require a revaluation of military values:

> To choose a sporting example, although the objective of the game, the number of plays, and the operating environment are essentially the same, football is fundamentally different from soccer because its underlying rule set is different. Accordingly, the competitive attributes of mass, continuity of play, self-synchronization, sustained speed, and others are revalued. There are important differences between the ways a soccer coach and a football coach would recruit, train, and organize their teams. (Cebrowski and Gartska, 1998)

This revaluation of military values would be characterized by a shift from those virtues associated with robustness of structure, such as fortitude, to virtues such as adaptation, regeneration and resilience. This would have significant implications for training, organization and the allocation of resources (see also O'Malley, 2010a).

Optimizing Network-Centric Warriors

It has been said that war has long provided a grid of intelligibility for liberal governance (Foucault, 2003). To the extent that radical uncertainty is said to similarly characterize contemporary civil emergency and military applications (Dillon and Reid, 2009, Dillon and Reid, 2001), an avenue has opened for the transfer of military solutions to address this security problematic in civil applications. The Revolution in Military Affairs (RMA) in particular, has sought to confront the radical contingency of the battle environment by encouraging the development of emergent and adaptive military structures, and has thus been influential in informing emergency preparedness and response plans. The transition to a more highly adaptive military structure was premised on a shift from the weapons platform to the information network, as the central organizational principle for all levels of military organization (Cebrowski and Gartska, 1998), while at the unit level, the information network became the source for new tactical approaches within a doctrine of network-centric warfare (Alberts et al., 1999a, Arquilla and Ronfeldt, 2001, Arquilla and Ronfeldt, 1997). The communications network is utilized to exacerbate communication between small bands of

highly networked troops contributing to shared situational awareness amongst members of the unit. Shared situational awareness accelerates the completion of complex tasks and facilitates bottom-up organization, or 'self-synchronization (Cebrowski and Gartska, 1998) of the unit permitting an emergent response to constantly evolving battle space.

According to the doctrine's architects, the principal benefit to be gained from the transitional to network-centric style of warfare is to be found in the competitive advantage gained within the speed of command (Cebrowski and Gartska, 1998). The competitive advantage in speed, whereby threats can be responded to and opportunities capitalized on more quickly than the opponent, permits small bands of troops to overwhelm more numerous adversaries and decisively arrive at victory. The most important factor in generating speed of command is a highly robust communications infrastructure, which can be more or less addressed through advances in technology and systems design. The more problematic factor, it is recognized, relates to the human capacity to process information in order to come to a decision:

> Information superiority provides the joint force a competitive advantage only when it is effectively translated into superior knowledge and decisions. The joint force must be able to take advantage of superior information converted to superior knowledge to achieve "decision superiority" – better decisions arrived at and implemented faster than an opponent can react, or in a noncombat situation, at a tempo that allows the force to shape the situation or react to changes and accomplish its mission. *Decision superiority does not automatically result from information superiority.* Organizational and doctrinal adaptation, relevant training and experience, and the proper command and control mechanisms and tools are equally necessary. (Director for Strategic Plans and Policy, 2000, emphasis added :8)

Within this framework, the capacity of soldiers to quickly process information and arrive at decisions so as to instantiate and optimize processes of self-synchronization has emerged as a guiding problematic for strategies of network-centric warfare.

USAF Colonel John Boyd's OODA loop (Observe-Orient-Decide-Act) is commonly used as a model for the decision-making processes of a soldier within literatures pertaining to self-synchronization (Alberts et al., 1999b, Arquilla and Ronfeldt, 1997, Barnett, 1999, Cebrowski and Gartska, 1998, Wesensten et al., 2005).[53] The OODA loop represents, in short, a cybernetic feedback loop in which environmental conditions are assessed, then used as the basis for a decision, the outcome of which impacts the environment, starting the whole processes again ad-infinitum (Osinga, 2007: 74-85). Speed of command is accelerated by tightening the revolutions of the OODA loop of individual soldiers in a networked unit thus accelerating the unit's ability to make organizational adjustments within a rapidly evolving battle environment. Ideally, according to Vice-Admiral Cebrowski, self-synchronization would operate such that OODA loop coils so tightly as to disappear—denying the enemy any operational pause (Cebrowski and Gartska, 1998). The ideal response time thus tends towards reflex: an immediate link between observation and action. Gains made both to accelerated speed of command and amplified combat power permit control over the rate of evolutionary change in the battle-environment and 'lock-out' of the enemies ability to do the same (Cebrowski and Gartska, 1998).

According to Boyd, efforts to contract the OODA loop must ultimately be directed at the problematic orientation phase, which "as the repository of our genetic heritage, cultural

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[53] OODA loops are also frequently discussed within civil contingencies exercises (See, for example, Lindgren and Bandhold, 2003: 6-8).

tradition, and previous experiences – is the most important part of the OODA loop since it shapes the way we observe, the way we decide, the way we act" (Boyd, 1987). The Orientation phase links the intake of information, to the output of a decision and thus refers to the processes through which information is analyzed and synthesized in order to proceed to a decision. Strategies aimed at accelerating the OODA loop thus far operate not by seeking to order the cognitive processes themselves, but by optimizing the conditions of operability of these processes, in order to boost their speed and efficiency.

In particular, the prefrontal cortex has been targeted as a key component in accelerating the orientation phase of the OODA loop: the brain region where it is said emotion, anticipation and situational awareness culminate (Wesensten et al., 2005). The prefrontal cortex is understood to affect the capacity of the individual to form relations with technology, with the environment and with other bodies. This capacity to form relations is influenced by the ways in which expectation is structured within the preconscious register of the subject. Varying the excitability of the prefrontal cortex gives control over the speed in which decisions are made. Factors known to depress the functions of the prefrontal cortex, such as extreme temperature conditions, dehydration, high operational tempo and sleep deprivation, were found to slow subject's ability to complete even simple psychomotor tasks (Wesensten et al., 2005). The complex cognitive tasks required by the soldier within the field, including the ability to maintain shared situational awareness, has thus made the constant monitor of the prefrontal cortex, through sensors and software applied to the soldier, a necessary component of network-centric operations (Wesensten et al., 2005, see also Peters et al., 2007). Alternative efforts have also been made to stimulate the functioning of prefrontal cortex including the provision of caffeinated chewing gum (Kamimori et al., 2004).

What military psychologists are ultimately interested in optimizing are the conditions in which complex decision-making processes reach maximal efficiency and speed. The strategies developed to achieve this task are directed at the prefrontal cortex insofar as it is perceived to be the location in which anticipation, as well as other affective states, translate into higher levels of awareness of one's environment. The decision-making processes of the subject are black-boxed as a complexly constituted field in which decisions are emergent. Governance operates not by attempting to order these complex processes of cognition, but by optimizing their conditions of operability. Power, here, is not concerned with the specific coordination of actions, but in learning to modulate the anticipatory levels to induce reflexive, as opposed to reflective, decision-making (Massumi, 2005a: 33, Cf. Foucault, 2008: 259-60). The power applied to the subject thus does not seek to determine actions but "assists in the germination of potentials for action, whose outcome could not be determined in advance" (Massumi, 2005a: 32-33).

Emergent Security

A follow-up report to *Joint Vision 2010* entitled *Joint Vision 2020* (United States Department of Defense, 2000) would look to update the argument advanced in the original in light of advances in the information revolution, and extend this organizational template both to allies including NATO and temporally into the future. No doubt compelled by the desire to continue to integrate with American forces, the UK Ministry of Defence would signal the

intention to more fully develop 'network-enabled capabilities'[54] within the 2002 Strategic

Defence Review (Ministry of Defence, 2002: 14-18). That the review conducted by the

Ministry of Defence coincided with the Cabinet Office's Emergency Management Review is

far from coincidental. Indeed, the very concepts, strategies and practices associated with

network-centric military operation to be adopted by the British Armed forces can also be

found guiding the reorganization of UK Civil Contingencies Management.

The 2001 Emergency Planning Review sought a thorough reorganization of the UK

Civil Contingencies machinery to permit it to better address the complex civil emergencies

which had become the focus of post-Cold War emergency planning. To the extent that

military and security operations shared a common problematic—namely the radical

contingency of threat environments—the newly organized civil contingencies apparatus would

borrow heavily from the concepts, strategies and organizational principles forged within the

Revolution in Military Affairs. An emphasis was placed on information-sharing and

communications at all levels of the emergency management architecture as key enablers for

adaptive and emergent emergency responses. Rooted in the ethos of Integrated Emergency

Management (IEM), emergency responses would prioritize communications as a means of

better integrating the array of specialist agencies required to intervene in a complex

emergency, and ensure that plans were flexible enough to respond to unique events and adapt

alongside the non-linear and thus unpredictable evolution of the emergency itself. The

organization and strategy of UK emergency response was to be directed in accordance with

the key concept of resilience.

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[54] Within the 2002 Strategic Defence Review these are referred to as 'network-centric capabilities'. 'Network-enabled capabilites' has become the predominant phrase now used by the Ministry of Defence.

Resilience has been defined by the Home Office as the ability "at every relevant level to detect, prevent, and, if necessary, to handle and recover from disruptive challenges" (Home Office, 1997: 1). Elaborating somewhat upon this definition Bruce Mann, Head of the Civil Contingencies Secretariat, describes resilience as "the ability to respond to an emergency, minimise and absorb any damage, and recover" (Mann, 2007). Resilience is not circumscribed to a particular set of practices or programme of governance. Rather, it refers to a quality exhibited by a diverse array of security referents, including populations, economies, and critical infrastructures. Since 2001, the UK Civil Contingencies Secretariat has been mandated with enhancing UK resilience to a wide spectrum of threats including natural disasters, pandemics, industrial accidents and terrorist attacks. As a security *strategy,* enhancing UK resilience depends upon the exercise of a heterogeneous assemblage of techniques, technologies and knowledges which comprise a security assemblage aimed at enhancing the adaptive capacities of these systems to rapidly adapt to, and evolve *through,* crises.

Lentzos and Rose have noted that this entails "a systematic, widespread, organizational, structural and personal strengthening of subjective and material arrangements so as to be better able to anticipate and tolerate disturbances in complex worlds without collapse, to withstand shocks, and to rebuild as necessary" (Lentzos and Rose, 2009: 243). To this end, the Civil Contingencies Secretariat coordinates a complex machinery of governance comprised of both private and public agencies. These actors draw on expert knowledges and utilize specialist skills in reference to enhance the resilience of privileged systems. Taken together, the collective resilience of these systems comprises the stated aim of ensuring UK resilience. UK Resilience refers to the performative adaptability of a range of complex

systems to withstand, reorganize and regenerate quickly and efficiently in the wake of a potentially catastrophic event in order to minimize disruption to British life.

Resilience is thus circumscribed to a risk-based understanding of security understood in terms of mitigating vulnerabilities to a threat, rather than eliminating threat itself (Zebrowski, 2009). Resilience strategies have emerged alongside what scholars have noted has been a proliferation of anticipatory strategies within liberal security initiatives including precaution (Aradau and Munster, 2007, Ewald, 2002, Massumi, 2005b), preparedness (Aradau, 2010, Collier, 2008, Lakoff, 2007, Collier and Lakoff, 2008a) and pre-emption (Cooper, 2006a, de Goede, 2008b, de Goede and Randalls, 2009). Scholars have likewise noted that the growing reliance on these anticipatory techniques has coincided with the enframing of the contemporary security environment in terms of the radical uncertainty of threats (see Aradau et al., 2008, Dillon, 2006, 2007, Lobo-Guerrero, 2010). The uncertainty of terrorist strikes, epidemics, financial crises and natural disasters which haunt contemporary liberal security imaginaries is not exhausted by their unpredictable materializations, but also refers to the ways in which these dangers may rapidly escalated within and across systems in non-linear processes of emergence. As such, the contemporary security discourse is characterised by a new ontology of the emergency event depicted less in legal-theological terms as the punctuated arrival of a Schmittian 'exception' to a pre-existing order, but now in terms of an emergence (Dillon, 2007).

Resilience strategies can thus be situated within a larger assemblage of governance engaged with the problematic of securing against the radical contingency of contemporary threat. However it engages with the temporal dimension of danger's emergence in a way which distinguishes it from the anticipatory logics listed above. Enhancing resilience involves

mitigating vulnerability and optimizing the capacity to not only endure crisis but to 'bounce-back' from a potentially catastrophic event. Insofar as resilience therefore implies processes of recovery and regeneration absent within strictly vulnerability-mitigation understandings of security then resilience discourses are imbued with a specifically temporal element. Resilience may be understood as an 'emergent security' (Lobo-Guerrero, 2007) as it operates to secure life understood in terms its capacity for creative emergence, rather than its static being, or 'nature'.

What is so radically threatening about the emergent ontology of the contemporary emergency event is the *speed*—and, in particular, the *acceleration*—of its becoming-dangerous. Resilience, mimicking in many ways the emergence of contemporary threats, is a project aiming to enhance 'our' capacity for adaptive, self-emergence. It aims to optimize the capacity of systems that 'we' depend upon, or belong to, to rapidly co-evolve alongside the becoming-dangerous of threats. Resilience therefore operates according to a related, albeit inverted, logic to that of pre-emption: whereas pre-emption seeks to detect and terminate *potential* threats before they become dangerous, resilience looks to optimize the conditions of emergence, or evolve-ability, of an individual, collective or system to rapidly adapt to, and evolve *through,* crises. While logics of pre-emption employ the sciences of life to better perform the sovereign function of killing, resilience employs this very same knowledge to potential-ize life processes so it can *really* live. Strategies of resilience thus engage with threats at the dangerous level of beating them at their own game: by entering a race to out-perform, out-adapt, and evolve quicker than threat-itself.

In contrast to geopolitical security strategies which aim to secure a space from threat (ex. the fortress or bunker), resilience strategies secure against the emergency *event* by

ensuring a crisis does not escalate to an emergency. Speed is as integral in this regard as mitigating exposure to threats through risk-based techniques: coordinating agencies so as to quickly close-down the crisis and re-establish 'normality'. As a biopolitical security strategy, resilience operates not by protecting a referent from threat through prophylactic measures, but by enhancing the conditions of adaptive evolution so as to optimize the capacity to thrive within a dangerous and uncertain world.

Harnessing Emergence: Resilience and UK Civil Contingencies Planning

The key legislation for UK emergency management is the 2004 Civil Contingencies Act (CCA) (HM Government, 2004). Part One of the Act provides a framework for the delineation of responsibilities at the national, regional and local levels. It places legal obligations on local authorities and Category 1 emergency responders[55] to perform regular risk assessments, develop and regularly exercise contingency plans, and assist businesses with the development of continuity plans. Legal requirement also focus on enhancing information exchange with Category One responders having a legal obligation to cooperate and share information with Category Two responders as well as to provide information to the public regarding risks and emergencies. Part Two of the Act repeals outdated emergency powers legislation including the 1920 Emergency which had been drawn-up primarily for

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[55] Category 1 Responders are defined within the Civil Contingencies Act (2004) as "those organisations at the core of the response to most emergencies (e.g. emergency services, local authorities, NHS bodies)." Category 2 responders are, by contrast, understood to be 'co-operating bodies' which "are less likely to be involved in the heart of planning work but will be heavily involved in incidents that affect their sector. Category 2 responders have a lesser set of duties - co-operating and sharing relevant information with other Category 1 and 2 responders" (HM Government, 2004).

strikebreaking and civil defence purposes. Significantly, the act replaces the condition upon which emergency powers can be invoked from a threat to the supply and distribution of the 'essentials of life' to the more general condition that "an 'emergency has occurred, is occurring or is about to occur" (HM Government, 2004: 14).

Contingency planning within the United Kingdom is distributed across the administrative system and requires the coordination of bodies including central government departments and committees, the devolved administrations, local authorities, partnership groups, the front-line emergency services (police, fire, ambulance, coastguard) and, on occasion, the military (Smith, 2003). Organization is based on the principle that decisions are taken at the lowest appropriate level while co-ordination and strategic direction is provided at the highest necessary level. Localized incidents are to be handled exclusively by local responders, while events of progressive severity and geographic scope would increasingly involve regional and central government bodies (UK Resilience Guidance, 2005). Military involvement in civil contingencies operations, as set out in the *Strategic Defence Review* (Ministry of Defence, 2002), is made conditional upon the request of civil authorities when additional manpower and technical expertise is required.[56] The military is not therefore formerly incorporated into contingency plans as it is seen as a reserve force of last resort. That said, the Strategic Defence Review did recommended the creation of a Rapid Reaction Force—later renamed the Civil Contingencies Reaction Force—consisting of 6000 military personnel distributed across the country who could provide immediate support in the case of

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[56] In events which pose a threat to life, military services are offered at no charge, whilst if there is no threat to life then the civil authority will incur a charge for their involvement.

an emergency, guaranteeing for the first time a minimum level of support for civil emergencies regardless of international commitments. (Smith, 2003: 416).

The highest body involved with UK emergency management is the Civil Contingencies Committee (CCC), a dedicated Cabinet Committee chaired by the Home Secretary with final responsibility for emergency preparation and response. The CCC has three subcommittees: UK Resilience (UKR), chaired by the Minister for the Cabinet Office; London Resilience (LR), chaired by the Minister of State for Local Government and the Regions; and Chemical, Biological, Radiological and Nuclear Consequence Management (CBRN), chaired by the Minister of State for Community Safety. While the CCC meets regularly to review and discuss contingency preparations, it will also convene in the event of a major national or multi-regional crisis with ministers and senior officials from other Whitehall committees within Cabinet Office Briefing Room A, or as it is commonly known COBRA. A regional tier has been also been introduced to act as 'a mechanism for improving co-ordination and communication into and out from the centre of government' (Cabinet Office, 2005: 168, as quoted in Coaffee et al., 2009: 170).

The Civil Contingencies Committee is supported by the Civil Contingencies Secretariat (CCS) based in the Cabinet Office. The Civil Contingencies Secretariat is the government department responsible for emergency planning in the UK. Since 2001, the Civil Contingencies Secretariat has been mandated with enhancing UK resilience to a wide range of threats, including natural disaster, pandemics and terrorist attack. The unit offers guidance and support to government departments, agencies and other actors involved in crisis response with an emphasis on the generation of emergency plans and facilitating coordination amongst the myriad of actors involved in emergency response. The coherency of policy across the

regions is assisted by the Civil Contingencies Secretariat's detailed publications of best practice. The Civil Contingencies Secretariat is not directly involved with the direction of an emergency response, but instead seeks to optimise the conditions through which self-emergent organization may evolve through the interaction of multiple agencies involved in a crisis response. As Bruce Mann, the *Head of the Civil Contingencies Secretariat* has put it, "[o]ur approach is to enable and to encourage (Mann, 2007)". Coordination of emergency responses is principally left to local authorities, who are supported by the CCS through guidance and strategic advice. In practice, increasingly complex emergencies of a multi-regional or national scale may require the creation of a Lead Government Department (LGD) from Whitehall dedicated to coordinating crisis response.

Smith (2003) identifies five principle responsibilities of the CCS:

1. Assessment - Identifying potential future threats through Horizon Scanning and periodic UK Risk Assessments

2. Capability Management - Advising departments on crisis management with the aim of developing generic capabilities across Departments

3. Communication and Learning - Consisting of both the News Coordination Centre which disseminates information to the public during an emergency event and the Emergency Planning College which offers courses in contingency management

4. National Resilience Framework - Coordinates contingency partnerships including local authorities, volunteer groups and the private sector

5. Programme Coordination - Responsible for liaising with the CCC and running the Secretariats emergency operations centre

These responsibilities are distributed across 22 'workstreams', each led by a Government Department, comprising the Secretariat's Capabilities Programme: "the core framework

through which the Government is seeking to build resilience across all parts of the United

Kingdom".[57] These workstreams are categorized according to three themes.

1. 'Structural' workstreams focus on national, regional and local response capabilities and as well as resilient telecommunications 'an enabler of structural response capabilities'[58]

2. 'Essential services' workstreams include food and water; transport; health services; financial services; energy; and telecommunications and postal services.

3. Finally, twelve 'functional' workstreams focused on chemical, biological, radiological and nuclear (CBRN) resilience; infectious diseases (human); infectious diseases (animal and plant); mass casualties; evacuation and shelter; warning and informing the public; mass fatalities; humanitarian assistance; flooding; recovery; site clearance; and community resilience.

The Capabilities Programme is premised on ensuring "a robust infrastructure of response is in place to deal rapidly, effectively and flexibly with the consequences of civil devastation and widespread disaster inflicted as a result of conventional or non-conventional disruptive activity."[59]   The emphasis within the Capabilities programme reflects a commitment to enhancing the conditions of operability for the rapid convergence and self-organization of multiple agencies responding to complex emergencies. Rather than top-down control over emergency responses, the Civil Contingencies Secretariat promote self-sufficiency amongst emergency response units.

This new template has not been actualized without difficulty. Striking the proper balance between the use of pre-scripted planning protocols and improvised adaptive self-organization has led, in many cases, to the fragmentation of emergency plans into a series of

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[57] "Capabilities Programme" Cabinet Office website http://www.cabinetoffice.gov.uk/content/capabilities-programme accessed 3 November 2011.
[58] Ibid.
[59] Ibid.

micro-plans which can be activated by the appropriate Gold or Silver level coordinating groups[60] in the midst of a crisis. These might include alerting various agencies, cordoning off emergency sites or reserving beds in shelters and hospitals. Even more problematic in the operationalisation of these templates however has been working with the very different organizational structures and operational cultures that exist between the different agencies involved in UK emergency response. Whereas relatively horizontally structured organizations such as the Ambulance Services have been quick to take up, and incorporate, these plans into existing protocols, other agencies such as Fire-fighters, whose organization is more hierarchical, have found it more difficult. This has been further exacerbated by issues surrounding the superiority of rank between and within agencies which have obstructed integration and information-sharing, rendered and encouraged `silo-thinking` and rigidly hierarchical management. Like in the Revolution in Military Affairs, the adoption of principles of IEM are still in the processes of contestation and actualization with older, ingrained traditions of emergency response.

Conclusion

Resilience strategies adopted for dealing with UK Civil Contingencies actualized a template for operating in conditions of uncertainty forged within network-centric operations

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[60] In a response to an emergency Bronze, Silver and Gold managerial tiers may be successively set up, depending on the size and scope of the event. Bronze refers to the 'operational level' (concerned with front-line operations), Silver refers to the tactical level ("Determine priorities in obtaining and allocating resources; plan and co-ordinate overall response") and Gold the 'strategic level' ("Establish strategic objectives and overall management framework") (Cabinet Office, 2003: 18-21)

being adopted at that time by the UK military. Here, communications are paramount. Information circulation is used to facilitate the 'joined-up thinking' and 'shared situational awareness' required for holistic, multi-agency responses to complex emergencies. Like the RMA, the complexity sciences appeared to provide a vocabulary for understanding, and engaging with, the problems encountered within these environments: "The problem of effective coordination of disaster preparedness and response under conditions of uncertainty is similar to the problems addressed in organizational analyses of complex systems" (Pommerening, 2007: 10). The complex and emergent nature of the contemporary emergency presents the same problematics of operating within conditions of rapidly evolving, and thus radically uncertain, environments encountered in contemporary military operations. On the basis of this shared problematic, UK Civil Contingencies was amenable to strategies forged within the military seeking to elicit a similarly complex and emergent response.

The uniqueness of the emergency event—characterized by the nature of its non-linear temporal unfolding, geographic extension, and potential to cascade within and across systems—itself requires a similarly unique and emergent multi-agency response. The CCS has not enacted rigid protocols for emergency response but has instead sought to optimize the conditions of operability for the rapid convergence and self-organization of multiple agencies responding to complex emergencies through the development of the Capabilities Programme. Rather than top-down control over emergency responses, the Civil Contingencies Secretariat promotes self-sufficiency amongst emergency response units. Information sharing and communications technologies have been prioritized as a means of enhancing the integration and flexibility of multi-agency responses to complex emergencies. To this end the Civil Contingencies secretariat has sought to optimize the conditions of operability for such

operations through its Capabilities Programme. The aim however is not simply to optimize emergency responses, but to enhance the conditions of adaptive emergence for liberal life more broadly understood. Critical infrastructure protection has emerged as a key security consideration in this regard: ensuring that circulations essential for the vitality of liberal life continues uninterrupted.

Resilience is here understood as an 'emergent security' (Lobo-Guerrero, 2007). As an emergent security, resilience operates in relation to a particular speciation of life focused on its capacity for adaptive emergence. Coinciding with the advent of this new era of 'informational capitalism' has been the re-conceptualization of species-life in terms of a complex adaptive system, or 'network society'. By operating in relation to life understood as a perpetual process of becoming, rather than in terms of a static being, or 'nature', the security programmes associated with resilience operate in relation to a different telos. The stability of *the* social order was of paramount concern within security programmes guided by the logics of protection, which employed technique of discipline and socialized risk spreading to subdue dangerous emotions which, if left unchecked, threatened to dissolve the psychosocial bonds upholding this order. Resilience discourses, advance a very different account of the nature of social order, subjectivity and the emergency. Resilience logics not only presume the capacity for mutability in the form of social order, but take this transformative potential as a prerequisite for security. Rather than reinforcing a particular social form, security initiative aim to optimize the conditions of adaptive emergence for valued forms of life operating within a chaotic environmental milieu.

Correlative to these shifts in the ontopolitical account of species-being is a reconfiguration of imaginaries of emergency. The complex and emergent nature of the

emergency precludes the capacity to prevent all threats. But if resilience is enhanced through 'real' disasters, then experience with these events is not entirely undesirable. Crises *should not* be eliminated because they are opportunities to exercise the morphogenetic properties of life and enhance resilience. Liberal governance, far from retreating, is re-oriented. Mastery over the conditions of emergence for life-itself thus offers a new threshold for biopolitical governance (Cooper, 2006b, 2008, Dillon, 2006, 2008, Dillon and Lobo-Guerrero, 2008). On the other hand, a knowledge of the functions which are known to optimize emergence, when inverted, articulates a new science of thanatopolitical killing at the species-level by 'pre-empting emergence' (Cooper, 2006a) of those forms of life deemed inimical to valued liberal lives. This raises difficult questions with regard to the unqualified desirability of the advance of these sciences. The next chapter will elaborate upon the political and ethical implications of resilience strategies.

Chapter 5

The Chronopolitics of Resilience

The Government's aim is to reduce the risk from emergencies so that people can go about their business freely and with confidence

(UK Resilience Homepage)[61]

There is no liberalism without a culture of danger

(Foucault, 2008: 67)

In early 2007 the United Kingdom's Civil Contingencies Committee conducted a full national preparedness exercise to test the local, regional and national response to a pandemic flu. *Winter Willow* was delivered in two stages: the first comprising a national table-top exercise on 30th January, followed by a full national exercise which was conducted between the 16th and 21st of February. Incorporating over 5000 participants from government, industry and the volunteer sector it was the largest exercise of its kind to be performed within the UK. *Winter Willow* simulated up to a UK alert level of 4 (widespread cases within the UK) in order to exercise decision-making processes within governmental agencies and test the capacity for a wide range of governmental and non-governmental organizations to coordinate an effective

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[61] "UK Resilience" *Cabinet Office website* http://www.cabinetoffice.gov.uk/ukresilience accessed 13 March 2012.

and speedy response to an emergency. Stated objectives of Winter Willow included "test[ing] information flows, real-time modelling and access to timely expert advice during a pandemic" (Government Office for the South East, 2007) and the follow-up report stressed amongst the 'lessons learned' the need to streamline communication channels and consistency in reporting templates (UK Resilience, 2007). These 'lessons learned' reflect the concerns of previous exercises aimed not only at improving inter-agency communication but also the ability of "all organizations to assimilate information quickly enough to inform the necessary decisions" (Environment Agency, 2005).

Ensuring that the informational superiority afforded by information and communications technologies (ICT) translates into decisional superiority has emerged as a key governmental problematic within the time-sensitive arena of emergency preparedness and response planning. Here, it is recognized that in order for the benefits of information and communications technologies to be fully realised, a correlated effort to manage the capacity of actors and agencies to quickly sort and process the influx of information to arrive at decisions is required. While technological and system-design solutions continue to dominate the literature on Critical Infrastructure Protection (See for example Allenby and Fink, 2005, Arsenault and Sood, 2007, Gorman, 2005), the 'lesson learned' from these exercises point to an equally critical need to optimize the capacity of those working within Civil Contingencies to rapidly process this data. Resilience, in short, cannot depend on technological solutions alone, but requires corresponding efforts in the governance of individuals to ensure that the benefits afforded by these technologies of these technologies are realised.

The chapter analyses the governmental rationalities employed within UK Civil Contingencies with regards to how they strategize building resilience. It extends the analysis

of resilience performed in the last chapter to study the role of governance in accelerating the speed and improving the effectiveness of Integrated Emergency Response (IEM) operations conducted by UK Civil Contingencies. These questions are empirically investigated though a concerted study of UK preparedness exercises as a technique of governance. Preparedness exercises are used to train personnel and to test, develop and refine emergency response plans within UK Civil Contingencies operations. [62] They function as a prominent technique, mandated by the Civil Contingencies Act (HM Government, 2004), for building resilience to an unknowable future event (Adey and Anderson, 2012, Anderson and Adey, 2011a, 2011b). This chapter contributes to these studies by specifically investigating how preparedness exercises operate to promote subjectivities recognized as 'resilient' in the context of Integrated Emergency Response (IEM). An analysis of these exercises as a technique of governance reveals how the value of resilience is enacted within governmental programmes and can be used to make explicit the rationalities of governance informing resilience operations.

Foucault defined government as the 'conduct of conduct' (Foucault, 2000: 341). In doing so, he was careful to show how government shapes, but does not eliminate the freedom of the subject to act and think. Government, in other words, does not determine specific forms of subjectivity but acts to "structure the possible field of action of others" (2000: 341). "Regimes of government" Mitchell Dean explains "elicit, promote, facilitate, foster and attribute various capacities, qualities and statuses to particular agents. They are successful to the extent that these agents come to experience themselves through such capacities (e.g. of rational decision-making), qualities (e.g. having a sexuality) and statuses (e.g. as being an active citizen)" (Dean, 1999: 32). Government is an activity which influences the ways in

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[62] 'Exercises' *Cabinet Office Website, http://www.cabinetoffice.gov.uk/ukresilience/preparedness/exercises.aspx* accessed: 13 March 2012.

which a subject understands and freely comports themselves. Government is successful to the extent that the subject adopts such rationalities as way of structuring their own sense of self and world. This chapter investigates how the resilient subject is 'made-up' (Hacking, 1999) in the context of resilience discourses and the governmental programmes which seek their realisation. A study of preparedness exercises is used to investigate the ways in which subjectivity is understood, valued and problematised in the context of emergency response. By analysing how preparedness exercises seek to manufacture and promote resilient subjectivities this chapter aims to interrogate the systems of valuation which are enacted within the governmental rationalities informing contemporary UK Civil Contingencies.

Insofar as preparedness exercises are a principle technology for testing, training and optimizing emergency responses in the United Kingdom they deserve attention in their own right. However, I would like to suggest that preparedness exercises may also operate as 'laboratories of governmentality' (Miller and Rose, 2008: 8) where, in addition to their stated aims, new governmental techniques are manufactured, tested and refined and governmental rationalities constructed. In this sense, preparedness exercises are not simply sites of training and testing of emergency responders, but sites of experimentation in which programmes of governance associated with 'resilience' are developed, before their generalization to wider applications associated with improving 'UK resilience'. [63] An analysis of the governmentalities displayed in the context of preparedness exercises might therefore offer a

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[63] In this sense, these sites may function as 'laboratories of governmentality' in the same way in which the military functioned to develop disciplinary techniques and their associated governmentalities which then spread to more general social applications (Foucault, 1977) or the way in which the colonies were formerly utilized (Rigouste, 2009, Ryan, 2011), as locations in which techniques of governance may be trailed and refined, and governmentalities forged, before being applied to the governance of domestic populations.

paradigm from which to critically interrogate the rationalities and technologies of governance seeking to inculcate resilience more broadly.

The final section of this chapter will draw on the analysis performed here to advance a critique of resilience. This critique proceeds from highlighting the political and ethical implications of the 'chronopolitics' (Virilio, 1997, 1999, 2005) of resilience strategies 'need for speed'. Resilience is theorized as a security strategy which aims to optimize liberal life's conditions of emergence to quickly and efficiently adapt to, and rapidly close down, the duration of the crisis event and restore the linear, historical time of standard political processes. The political and ethical implications of such strategies are explored through an analysis of the role of sovereign power within Shakespeare's *Hamlet* and an engagement with the writings of Deleuze and Derrida with respect to living in a 'time out of joint'. The ability of resilience strategies to truly promote new forms of life is compromised by the sovereign insistence on controlling processes of emergent becoming. As such, resilience strategies rely on a precarious balance of optimizing processes of adaptive emergence whilst inhibiting the capacity of events to incite true self-overcoming and transformation.

Resilient by Design

Communications have long figured as a problematic within the organization of emergency responses. As demonstrated in previous chapters this problematic traditionally revolved around the democratic duty to inform populations of an imminent emergency when such information was assumed to pose a threat of inducing public panic (See also Oakes,

1994, O'Brien, 1955, Orr, 2006). In the context of this problematic questions regarding access to information were crucial: Who was to be granted access? What kinds of information were they to be given access to? And, when were they to be provided this information? Resilience discourses, on the other hand, engage with an almost diametrically opposed problematic. Resilience strategies are premised on the belief that self-organizational behaviour can be induced by exacerbating information flows amongst populations in emergency. This holds true whether these populations are professional (category 1 or 2 responders) or otherwise. Within this framework, communications technologies are seen to optimize and extend the 'natural' ability of social collectivities to self-organize in a response to crisis. Information security, in this context, is less concerned with limiting access as it is with protecting and promoting information flows through a robust, and ideally resilient, information and communications infrastructure.

Telecommunications infrastructure has been recognized as part of the United Kingdom's Critical National Infrastructure (CNI) (Electronic Communications Resilience & Response Group, 2007, National Infrastructure Security Co-ordination Centre, 2004) "the loss or compromise of which would have a major, detrimental impact on the availability or integrity of essential services, leading to severe economic or social consequences or to loss of life."[64] In fact, telecommunications might justifiably be regarded as the most critical of critical infrastructures. Of the eight essential services identified by the Civil Contingencies Secretariat, telecommunications infrastructures are afforded special priority as a "fundamental

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[64] 'The National Infrastructure' Centre for the Protection of National Infrastructure website
http://www.cpni.gov.uk/about/cni/ accessed 13 March 2012

enabler underpinning the effective response to any emergency".[65] Communications are a precondition for effectively responding to disruptions of other critical infrastructures (HM Government, 2009). The security of telecommunications infrastructures has emerged as a priority for liberal governance insofar as the circulation of information now operates as a precondition for the security of those circulations deemed essential for liberal life.

A primary mode through which the security of telecommunications infrastructures is now being strategized is through system-design. Drawing on the insights of emergent academic fields concerned with network connectivity including graph theory, network science and the complexity sciences (See Arsenault and Sood, 2007, Barabási, 2007, Garbin and Shortle, 2007, Gorman, 2005) resilience has been defined as a quantifiable function of the robustness of different network topologies to targeted failures. It is measured by the removal, one-by-one, of nodes and links within a network. As nodes are removed, networks splinter into smaller, disconnected islands and the integrity of the system to maintain circulation will be compromised (Cohen et al., 2006). Resilience is thus measured in terms of the critical fraction of nodes which can be removed over total nodes comprising a network before the ability of the system to continue its function is fully compromised.

Resilience and circulation are both functions of the patterns of connectivity found within a network. Yet they are not necessarily mutually reinforcing. It has been recognized that critical infrastructures are often organized as 'scale free-networks' (Gorman, 2005). Scale-free networks are common, and appear often within naturally occurring structures including capillary structures, neural networks and the internet (Barabasi, 2002, 2007). Gorman explains that critical infrastructures, rather than being static vessels for the circulation

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[65] 'Introduction to Resilient Communications' *Cabinet Office Website,* http://www.cabinetoffice.gov.uk/ukresilience/preparedness/resilient_telecommunications.aspx accessed 13 March 2012

of items, are the product of evolution over long time frames (Gorman, 2005). Scale-free networks are characterized by having a few nodes with extremely high connectivity and an abundance of nodes with relatively low connectivity. This occurs as the result of the preferential connectivity given by new nodes to nodes demonstrating already high connectivity within evolving networks (Barabási, 2007). While scale-free networks optimize network traffic, this efficiency comes at the cost of increased vulnerability. The loss of critical, highly-connected nodes will have a disastrous effect on the survivability of the system. Scale-free networks are shown to have lower resilience, measured in terms of the fraction of nodes that can be removed from a system without jeopardizing its integrity, even when nodes are removed at random.

The resilience of critical infrastructures has been defined as "the ability of a system to recover from adversity, either back to its original state or an adjusted state based on new requirements" (McCarthy, 2007: 2) Within Critical Infrastructure Protection (CIP), these mathematical models have been used to locate network vulnerabilities and allocate resources accordingly (Arsenault and Sood, 2007, Gorman, 2005, Garbin and Shortle, 2007, Ottens et al., 2006). Yet, if understanding the vulnerability of networks requires knowledge of their architecture then the application of these mathematical models is frustrated by the lack of knowledge on the complex interrelations within and between networked infrastructures. It is often noted, for instance, that the social and material relationships embedded within infrastructures tend only to manifest themselves during periods of suspended service, breakdown or emergency (Graham and Marvin, 1996: 50-53, see also Graham, 2010: 3, Graham and Marvin, 2001). Interdependencies which exist between layered networks have proven particularly elusive, appearing only when failures cascade across them. Efforts to map

critical infrastructures so as to operationalise systems-design solutions are further complicated by the high degree of private ownership of essential infrastructures (Graham and Marvin, 1996: 135-138).   This has encouraged the development of public-private partnerships and information-sharing initiatives which distribute responsibility for the protection of essential infrastructures.[66]

Cascading failures need not be the result of physical damage.   The clogging of important network channels with non-priority information during an emergency, for example, highlights an equally important imperative to distinguish 'good' from 'bad' circulations.   This was the case in the terrorist attacks of 9/11 and 7/7 which demonstrated the inability of existing telecommunications infrastructures to handle the exponential increase in network demand that accompany such events—a significant problem for emergency services personnel that rely on these networks for communication and coordination.[67]   With economic constraints precluding an expansion of the network far beyond the twenty per cent overhead that currently exists within it, strategies have mainly focused encouraging Category 1 and 2 Responders[68] to reduce reliance on GSM communications (the standard mobile network) (Civil Contingencies Secretariat, 2007).   This has been reinforced by the recognition that mobile phone networks

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[66] These include the National Emergency Plan for the UK Telecommunications Industry which details emergency contact points and emergency plans which are regularly exercised and The Memorandum of Understanding for cooperation in emergency Situations which ensures the sharing of human and material resources amongst providers when required in an emergency. See "Role of the Telecommunications Industry in Emergency Planning" *Cabinet Office Website* http://www.cabinetoffice.gov.uk/resource-library/role-telecommunications-industry-emergency-planning accessed 13 March 2012.

[67] "Resilient Telecommunications" *Cabinet Office Website* http://webarchive.nationalarchives.gov.uk/+/http://www.cabinetoffice.gov.uk/ukresilience/response/resilient-telecommunications.aspx accessed 13 March 2012.

[68] Category 1 responders are classified within the Civil Contingencies Act as those organizations at the core of the response to most emergencies (e.g. emergency services, local authorities, NHS bodies). Category 2 organisations (e.g. Health and Safety Executive, transport and utility companies) are "co-operating bodies" that are less likely to be involved in the heart of planning work but will be heavily involved in incidents that affect their sector (See HM Government, 2004).

are a remarkably un-resilient communication medium insofar as they are dependent on both the core communications network (responsible for land-line services) and the availability of grid distributed electricity (Electronic Communications Resilience & Response Group, 2007)**.**

A resilient telecommunications infrastructure, according to the Civil Contingencies Secretariat, is one "able to absorb or mitigate the effects of a disruptive challenge".[69] This is being pursued through locating, developing and communicating to all interested parties a series of 'fall-back solutions'[70] in the event of network overload or physical disruption. Initiatives to create resilient communications infrastructure for emergency responders and government include the development of the High Integrity Telecommunications System (HITS),[71] the Mobile Telecoms Privileged Access Scheme (MTPAS), and the National Resilience Extranet (NRE)[72] which, when taken together, comprise a layered communications infrastructure providing built-in redundancy in the event of disruption. The CCS has also sought to facilitate information sharing and emergency coordination between government and members of the telecommunications industry through the development of the National Emergency Alert for Telecommunications (NEAT) protocol, which was tested in Exercise White Noise (2009) led by the Department of Business Innovation and Skills with assistance

[69] "Resilient Telecommunications" *Cabinet Office Website* http://webarchive.nationalarchives.gov.uk/+/http://www.cabinetoffice.gov.uk/ukresilience/response/resilient-telecommunications.aspx accessed 13 March 2012

[70] Ibid.

[71] HITS provides a highly resilient telecommunications network, composed of a hybrid of terrestrial and satellite bearers, between Strategic Co-ordination Centres, Regional Operations Centres and the Civil Contingencies Secretariat. This service will also be provided to businesses and individuals on a subscription basis. See "Resilient Communications" *Cabinet Office Website,* http://webarchive.nationalarchives.gov.uk/+/http://www.cabinetoffice.gov.uk/ukresilience/preparedness/resilient_telecommunications/hits.aspx accessed 13 March 2012.

[72] The NRE is being developed by the Department of Communications and Local Government and is funded by the Cabinet Office. It will provide a resilient, browser-based tool with restricted access to emergency service personnel to facilitate information exchange as well as access to centrally stored information such as best practice guidelines and situational reports (SitReps). "Resilient Telecommunications: The Government's Strategy for enhancing the resilience of telecommunications" *Cabinet Office Website,* http://webarchive.nationalarchives.gov.uk/+/http://www.cabinetoffice.gov.uk/ukresilience/preparedness/resilient_telecommunications/govt_strategy/strand4.aspx accessed 13 March 2012.

from the CCS (Department for Business Innovation and Skills, 2009). Furthermore, *UK Resilience*[73], the official website of the CCS, provides a platform for the dissemination of a broad range of materials for emergency planners, industry and the public on preparing for emergencies. Regional Resilience offices likewise maintain preparedness websites, supplemented by mailing lists, which keep the public informed as to potentially disruptive challenges in the region, as well as the ongoing efforts of their regional offices to combat them.

> According to David Godschalk (2003)

> "Resilient cities are constructed to be strong and flexible rather than brittle and fragile . . . their lifeline systems of roads, utilities and other support facilities are designed to continue functioning in the face of rising water, high winds, shaking ground and terrorist attacks." (as quoted in Coaffee, 2006: 129).

Lewis Perelman goes even further. He has argued that "[i]n a resilient society, 'critical infrastructure' is not better protected. Rather, in a resilient society there is less (ideally no) 'critical infrastructure' to protect" (Perelman, 2007: 40). A truly resilient critical infrastructure is secure not because of the absence of threat, but insofar as its vulnerability to attack has been eliminated. It is an ideal a projection of the liberal security imaginary: a diffuse, self-repairing, complex adaptive system which is self-governed and requires no outside intervention. The most ambitious of design solutions have already begun to research how infrastructures might be imbued with the properties of self-healing regeneration characteristic of vital tissues (See Amin, 2000, Perelman, 2007). Such efforts seek the realisation of a long-standing discursive trope which applies organic metaphors such as

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[73] "UK Resilience" *Cabinet Office Website* http://www.cabinetoffice.gov.uk/ukresilience accessed 13 March 2012.

lifelines, capillaries, nervous system, backbone, essential arteries, and organic essentials to describe these infrastructures (Dunn Cavelty and Søby Kristensen, 2008: 2).

Yet until systems design or technological solutions to critical infrastructure protection can function alone, the speed and effectiveness of emergency-response teams will be a necessary component of resilience strategies. The predominance of system-design solutions to resilience efforts has marginalized discussion concerning the importance of the governance of the 'human element' of these operations. No doubt this imbalance reflects the priority placed on techno-scientific solutions within contemporary security operations. But it is also the product of popular assumptions regarding the relationship between human subjects and technology in which technologies are understood as simple prosthetics which extend and enhance pre-given 'human' functions. Such assumptions have been integral to accounts in which resilience is portrayed as a 'natural' phenomenon which may be extended geographically and enhanced through the provision of communications technologies (See Gorman, 2005, Allenby and Fink, 2005, Arsenault and Sood, 2007). The relationship between human subjects and technology may be far more complicated than this however. The discussion which follows explores the implications for resilience when technologies are understood to play a more active role in determining what the human is.

The Subject of Technology

In a chapter entitled 'Docile Bodies' within *Discipline and Punish,* Foucault discussed the development of techniques within the military sciences of the late 18th and early

19th centuries that sought to operate with and optimize the 'natural' capacities of the body. In addition to, but also profoundly related to, the spatial and temporal considerations associated with the organization of bodies, Foucault identified an interest in the very interface between the body and the weapon, tool or machine. The meticulous detail used to outline the body's optimal integration with the firearm was evidence of what he referred to as 'the instrumental coding of the body' (Foucault, 1977: 153). This coding provided a schema for understanding the body which enabled techniques of governance which operated such that "over the whole surface of contact between body and the object it handles, power is introduced, fastening them to one another" (Foucault, 1977: 153). Disciplinary power, which "appears to have the function not so much of deduction as of synthesis, not so much of exploitation of the product as of coercive link with the apparatus of production," is implicated in the production of what Foucault terms the 'machine-body complex' (Foucault, 1977: 153).

The instrumental coding of the body represents a particular enframing or 'functional reduction of the body' (Foucault, 1977: 164). The body is not just understood, but valued and governed in relation to its capacity to integrate with tools. As the 'natural' body of the soldier became understood in terms of its capacity to be synthesized with the weapon, tool or machine, so too can it be fastened to other bodies creating even larger organic-machinic assemblages in which "[t]he body is constituted as part of a multi-segmentary machine" (Foucault, 1977: 164). This is given its most ambitious articulation within Servan's ideal war-machine.

> Thus Servan dreamt of a military machine that would cover the whole territory of the nation and in which each individual would be occupied without interruption but in a different way according to the evolutive segment, the genetic sequence in which he finds himself (Foucault, 1977: 165).

The 'machine-body complex' appears to serve as an important precursor to conceiving populations as species-bodies (Reid, 2008b: 72). As techniques of discipline migrated outside the military field, so too did this enframing of the body and the model of a multi-segmentary machine (Foucault, 1977: 168).

> Enter your benches. At the word *enter*, the children bring their right hands down on the table with a resounding thud and at the same time put one leg into the bench; at the words *your benches* they put the other leg in and sit down opposite their slates…*Take your slates*. At the word *take*, the children with their right hands, take hold of the string by which the slate is suspended from the nail before them, and, with their left hands, they grasp the slate in the middle; at the word *slates,* they unhook it and place it on the table (Foucault, 1977: 167).

Echoing this early preoccupation with the 'machine-body complex', the interface between ICT and emergency responders has emerged as an important site of governmental intervention within resilience discourses (Bharosa et al., 2010, Carver and Turoff, 2007, Chen et al., 2007, Comfort, 2007, Comfort and Kapucu, 2006). Socio-technical systems approaches have proved particularly influential in conceptualizing this problematic and advocating responses to it, as is evident within the Home Office's commissioning of a recent report series from the Socio-Technical Centre at Leeds Business School (Challenger et al., 2010a, 2010b). A 'socio-technical systems' perspective operates by analyzing humans and technologies as an integrated system in which "people, processes and procedures, goals, culture, technology, and buildings and infrastructure should all be viewed as interdependent and given joint consideration" (Challenger and Clegg, 2011: 345). In the field of emergency planning and response, socio-technical systems frameworks have been used to understand the complex

dynamics contributing to crowd-related disasters (Challenger and Clegg, 2011), to analyze crowd behavior following disasters (Challenger et al., 2010a, 2010b) and to optimize the resilience of emergency response teams (Comfort et al., 2001, Comfort, 2007, Comfort and Kapucu, 2006).

In the context of Integrated Emergency Management (IEM), Louise K. Comfort has studied the role of ICT in enhancing processes of 'cognition', defined as "the capacity to recognize the degree of emerging risk to which a community is exposed and to act on that information" (Comfort, 2007: 189). Communications, according to Comfort, are essential for building a "common operating picture" which in turn facilitates the integration of agencies and accelerates decision-making. Quite distinct from the 'multi-segmentary machines' analysed by Foucault, in which organic bodies were to be tools and weapons to create machines, the socio-technical systems of integrated emergency response aspire to distributed neural networks composed of nervous systems bound by communications infrastructures. Notably, socio-technical systems are not organized to enhance and extract the productive power of the body's physical labour as the multi-segmentary machine did, but instead focused on optimizing and distributing cognitive processes across a dispersed network (Carver and Turoff, 2007). It is, in short, an information processing machine rather than an engine. In this respect, the contemporary 'machine-body complex' operating within integrated emergencies response may be analyzed as a kind of cyborg.

In contemporary usage the cyborg refers most often to the union of the human and intelligent machine within an entity recognized as 'post-human'.[74] For its proponents,

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[74] The term cyborg ('cybernetic organism') was invented by Manfred Clynes and Nathan Kline in 1960 to refer to organisms, modified in various ways so as to better suit them to the demands of space travel. Hacking, in a

developments associated with computing, nanotechnology, biotechnology and the cognitive neurosciences hold the promise of a radical merger of the human brain with computer based intelligence in the not too distant future (See Kurzweil, 2005). Such accounts hold that the trajectory of contemporary technoscience is advancing towards a radical ontological shift in the very being of 'the human'. Andy Clark has downplayed the profundity of this shift, contending that we are, in fact, 'natural-born cyborgs': creatures whose minds are special precisely because they are tailor-made for multiple mergers and coalitions"(Clark, 2003: 7).

> For what is special about human brains, and what best explains the distinctive features of human intelligence, is precisely their ability to enter into deep and complex relationships with nonbiological constructs, props, and aids. This ability, however, does not depend on physical wire-and-implant mergers, so much as on our openness to information-processing mergers." (Clark, 2003: 5).

Clark explains that in this sense we are becoming-cyborg "not merely in the superficial sense of combining flesh and wires, but in the more profound sense of being human-technology symbionts: thinking and reasoning systems whose minds and selves are spread across biological brain and non-biological circuitry" (Clark, 2003: 1).

N. Katherine Hayles has written about how the figure of the cyborg serves both to deconstruct and reinscribe dominant accounts of human subjectivity. While critical of the disembodiment of information which accompanies and supports many post-human accounts, she does identify the critical capacity of these trends to challenge the discursive dominance of the liberal humanist subject—an earlier enframing of the human 'produced' by market relations (1999: 3). Hayles has traced the discursive conditions of emergence for the cyborg

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highly revealing observation, notes that these efforts were designed to preserve 'human nature' within alien environments (Hacking, 1998).

within twentieth century science and popular culture (1999) and, in later work, how the figure of the computer has acted *both* as a discursive trope and the means through which 'we' are conditioned to recognize ourselves as 'digital subjects' (2005).

Subsequent studies have sought to expand upon Hayles' work by shifting the focus from a discursive analysis of post-human tropes to the processes through which technologies themselves actively shape human subjectivity. Brian Rotman in his book *Becoming Beside Ourselves* (2008) focused on the role of materiality, rather than the content, of media technologies in shaping the subject. Media technologies are not simple prosthetics which extend and enhance 'natural' human capacities, but assemblages capable of reconfiguring the subject at the existential and biological level. Rotman argues that every media technology projects an ideal user. Through repetitive engagements with this technology, the forms of agency associated with this ideal user feedback upon the user: eliciting, promoting and refining particular behaviors and forms of subjectivity. Drawing on contemporary research in cognitive neuroscience, human anthropology, media theory and language theory, Rotman suggests that the media ecologies which subjects operate in serve to construct the conditions under which particular neurological architectures may evolve conducive to the operation of these technologies.

> Technologies, as we've observed, restructure our neurology, to impinge on the body and its psychic envelope along specific channels: conventionally either as prosthetic extensions of physical, cognitive, and perceptual powers (the usual effects of tools, machines, apparatuses) or, as media, through the corporeal changes of affect and subjectivity wrought by the cultural products they make possible (the usual effects of the arts, literature, film, and so on). But less obvious and no less interesting, more so perhaps because they operate invisibly, are the non-explicit, unintentional, and pre-cultural corporeal effects of technologies: their recalibration of time and space, their facilitations of new modalities of self, and the

work they do behind or beneath or despite the explicitly instrumental or signifying functions they are known by and are introduced to discharge (Rotman, 2008: 53)

Rotman's thesis is that the complex media ecologies now actualizing are inducing a form of subjectivity quite distinct from the subject who was constructed to engage with serial technologies, such as reading and writing, where data is presented and absorbed in linear succession. In its place, a 'para-self' is slowly taking form, suited for navigating worlds characterized by an abundance of informational media. Rotman draws on the example of GIS maps, such as Google Earth, which utilize layers to co-present images and information which may be dynamically viewed by users. This requires, according to Rotman, the capacity to proactively navigate, sort, distinguish and synthesize various streams of information presented in parallel, rather than serial, form.

What Hayles and Rotman, in their different studies, agree upon is that technologies are not simple prosthetics which extend and enhance a pre-formed human subject. In important ways they act to reconfigure subjectivity. In their particular enframing of the human subject, they serve to elicit and promote particular behaviours whilst, at the same time, suppressing others (Cf. Heidegger, 1977). While technologies are undoubtedly the product of human efforts, they also feedback *upon* the user: facilitating, eliciting, and promoting new behaviors by engaging users in repetitive patterns of action. Technologies thus need to be understood in terms of their positive effects of eliciting subjectivities. Yet, while these accounts advance provocative arguments on how the subject is configured through evolutionary forces and media ecologies, less is said about the role of governmental programmes more explicitly attached to the realisation of the ideal forms 'projected' by technologies themselves. How does government

intervene to influence, elicit, promote and optimize these ideals?   How do they frustrate their

realisation? What is the role of power?

In order to realise the gains afforded by informational superiority to Integrated Emergency

Management, it has been implied that associated efforts are required to mold, shape, and

optimize the subject to integrate with these technologies:

> Increases in organized complexity require significant increases in information
> flow, communication and coordination in order to integrate multiple levels of
> operation and diverse requirements for decisions into a coherent program of
> action....Yet, human decision makers have limited cognitive capacity. In rapidly
> changing environments, they are often unable to process the amount and range of
> information required to make timely, informed decisions essential for adequate
> coordination among the multiple components of the response system.   The
> sequence of organizational decisions repeatedly falls out of synchronization with
> technical requirement for mobilization of action.   Accordingly, organized
> performance in complex environments has been viewed as necessarily limited by
> human information processing capacity (Comfort et al., 2001: 144, see also Carver
> and Turoff, 2007).

Despite critiques of the overreliance on techno-scientific 'solutions' for optimizing socio-

technical systems (Clegg et al., 2000), researchers have failed to explore, in any substantial

manner, how emergency responders are governed so as to optimize their capacity to process

these information flows so as to arrive at a timely decision.   The relative silence within

resilience literatures on these questions can be contrasted however with the great deal of

attentions these questions have received within military literatures associated with Network-

Centric Warfare (see previous chapter, 159-163).

Preparedness exercises are one technique of governance which aims to foster resilient

subjectivities and accelerate emergency responses. Like military efforts designed to optimize

the cognitive capacities of Network-Centric Warriors, preparedness exercises focus on

modulating the anticipation of 'players' as a means of accelerating their capacity to compile

and process information flows and arrive at a timely decision. In the following section we will

examine in detail how preparedness exercises operate on the anticipatory predisposition of the

subject to accelerating decision-making within conditions of duress. For the time being, it is

sufficient to note how the stress placed on preparedness exercises undermines the assumption

that the provision of information and communications technologies unproblematically extends

'natural' human tendencies of self-organization. If subjects require governance in order to

elicit subjectivities more amenable to the functioning of these technologies then the

assumption that resilience strategies harness 'natural' human processes is undermined.

Moreover, it puts into question the very meaning of the freedoms actualized by resilience

discourses when subjects must be governed in order for the potential of security technologies,

said to represent a precondition for liberal freedom, to be fully realised.

Exercising Resilience

Preparedness exercises are used extensively by the Civil Contingencies Secretariat as a

means for training-in resilience. Exercises serve to simulate an emergency event within which

players may rehearse emergency responses. The UK Resilience website promotes exercises as

a necessary element of preparedness planning which are used to test emergency plans and

procedures, "develop staff competencies and give them practice in carrying out their roles in

the plans".[75] Different 'genres' of exercise (Davis, 2007, Cf. Thrift, 2004) including paper-based 'table-top' exercises, computer-based simulations and 'live' role-playing exercises are relied upon in different measure, and often mixed, to exercise various functions, train different personnel and do so at variable costs.

Preparedness exercises currently function as a prominent technique for developing the competencies and virtues associated with resilience (Adey and Anderson, 2012). The Civil Contingencies Act (HM Government, 2004) mandates regular exercises for Category 1 responders to be organized by local or regional authorities and encourages regular exercises for Category 2 responders. Central government has organized a cross-governmental exercise programme to test the coordination of various tiers of emergency response--from central government and the Civil Contingencies Committee to regional and local response teams--to a wide range of challenges from natural disasters[76] to viral pandemics[77] to acts of terrorism.[78] Exercises have been conducted in international joint operations with the G8, NATO, and the EU, as well as on a bilateral basis[79] however most exercises have been conducted at the local and regional levels organised around Local Resilience Forums (LRFs) (Cabinet Office, 2010b),

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[75] 'Exercises' *Cabinet Office Website, http://www.cabinetoffice.gov.uk/ukresilience/preparedness/exercises.aspx* accessed: 13 March 2012.

[76] Exercise conducted June-July 2004. See 'Exercise "Triton' *UK Cabinet Office Website* http://www.cabinetoffice.gov.uk/ukresilience/preparedness/exercises/nationalcasestudies/triton.aspx accessed: 13 March 2012.

[77] See 'Exercise "Winter Willow' *Cabinet Office Website* http://www.cabinetoffice.gov.uk/ukresilience/preparedness/exercises/nationalcasestudies/winter_willow.aspx accessed: 13 March 2012 (conducted 30 January & 19-20 February 2007)., Exercise "Hawthorn' *Cabinet Office Website* http://www.cabinetoffice.gov.uk/ukresilience/preparedness/exercises/nationalcasestudies.aspx accessed: 13 March 2012`(conducted 5 April 2005)., 'Exercise "Aurora"' *Cabinet Office Website* http://www.cabinetoffice.gov.uk/ukresilience/preparedness/exercises/nationalcasestudies/aurora.aspx accessed: 13 March 2012 *(*conducted September 2005).

[78] Exercise conducted April 2005 in joint operation with the United States and Canada. See 'Exercise "Atlantic Blue"' *Cabinet Office Website* http://www.cabinetoffice.gov.uk/ukresilience/preparedness/exercises/nationalcasestudies/atlanticblue.aspx accessed: 20 August 2010.

[79] 'National Exercises: Case Studies' *Cabinet Office Website* http://www.cabinetoffice.gov.uk/ukresilience/preparedness/exercises/nationalcasestudies.aspx accessed: 13 March 2012.

reflecting the responsibility placed on local authorities within Civil Contingencies management in the UK (Anderson and Adey, 2011b: 7). The Emergency Planning College, run by Serco Plc. on behalf of the Home Office, provides specialist courses, seminars and workshops in emergency planning and business continuity. The UK Resilience website provides guidance for businesses in the development of their own contingency plans though the Business Continuity Management (BCM) programme[80] and promotes exercising these plans though discussion-based, table-top and live exercises[81] for the purpose of "helping participants develop confidence in their skills and providing experience of what it would be like to use the plan's procedures in a real event."[82]

Recent scholarship has begun to examine preparedness exercises as a technology of risk-management. A genealogy of preparedness exercises would trace a long history including war-gaming (Perla, 1990, Der Derian, 2003), Civil Defence exercises (Davis, 2007) and the use of systems analysis by futurologists such as Herbert Khan of the RAND Corporation (Ghamari-Tabrizi, 2005, Lakoff, 2007). Davis has studied how exercises were utilised in the Cold War as a technique for rendering a potential nuclear confrontation 'imaginable, manageable and most of all capable of being acted upon, at least in part." (Davis, 2007: 3). Lakoff situates exercises, and the logic of 'preparedness', at the limit of insurance technologies, as a means for generating data on events which "cannot be mapped through actuarial knowledge and whose probability therefore cannot be calculated" (Lakoff, 2007: 253). Instead of relying on actuarial data, exercises render a future dystopian event through

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[80] 'Business Continuity', *UK Resilience,*
http://www.cabinetoffice.gov.uk/ukresilience/preparedness/businesscontinuity.aspx accessed: 13 March 2012.
[81] See especially the 'The Exercise Planners Guide' (Home Office, 1998) and 'Home Office guidance: Why exercise your disaster response' at 'Exercises' *UK Resilience,*
http://www.cabinetoffice.gov.uk/ukresilience/preparedness/exercises.aspx accessed: 13 March 2012.
[82] 'Exercises' *Cabinet Office Website, http://www.cabinetoffice.gov.uk/ukresilience/preparedness/exercises.aspx*
accessed: 13 March 2012.

the imagination in relation to which plans can be tested and capabilities exercised which would be utilized in an 'actual' response. Aradau claims that preparedness exercises represent a 'new *ratio*' which rivals techniques of statistical calculability insofar as it "proposes a mode of ordering the future that embraces uncertainty and 'imagines the unimaginable' rather than 'taming' dangerous irruptions through statistical probabilities" (Aradau, 2010: 2-3). Cooper, shows how the reliance on techniques of 'speculative' imagination within exercise correlate with the methodologies of speculative finance and meteorology as means for operating in a world increasingly characterized as uncertain, or even 'turbulent' (Cooper, 2010).

As a speculative technique, exercises do not aim to predict the future, but look to render *a* possible, dystopian future in relation to which faculties can be nurtured and capabilities exercised in preparation for a potential event which is itself unknowable. Insofar as they do not aspire to prophesy, exercises are not assessed in relation to predictive accuracy: true or false. Rather, they are assessed according to their ability to 1) generate feedback on existing plans 2) train-in required faculties of those associated with an emergency response and 3) build confidence in the integrity of emergency plans and the capacities of oneself and one's colleagues. It has been noted that exercises "authorize knowledge claims in the absence of actual events" (Lakoff, 2008: 419) by revealing gaps in existing response plans, directing budget allocation and highlighting areas requiring further technical or research support (Anderson and Adey, 2011b: 4). While considerable theorization has been placed on exercises as a technique for rendering unpredictable futures actionable, less attention has been paid to the forms of subjectivity which contemporary preparedness exercises seek to elicit and promote. How are emergency responders problematised? How is agency conceptualized?

What forms of subjectivity are valorised? How do practices of governance seek to promote these forms? How do these governmental practices and subjectivities promote resilience?

Here, it is important to recognize exercises not simply as sites of governance but as techniques of governance in themselves (in the same way in which a church is not just a place where governmental techniques, such as confession, are exercised, but a construct whose very architectural design has governmentalising effects, for example the creation of docile bodies). The exercise functions to situate players within a simulated emergency event, to dwell in its affective atmospheres, act-out pre-scripted plans and exercise the improvised coordination required for responding to an emergent complex emergency. Recognizing the adoption of theatrical techniques and rehearsal methods within exercises some of the most interesting analyses of exercises have come from scholars of performance studies. Tracey Davis, a performance historian, recognizes in respect to Civil Defence exercises that

> [t]his was not the art and entertainment known as "the theatre" yet it was staged; this was not "performance" yet it was performative, both in the sense of display and something that was done subject to evaluation. It could be spectacular, or not; well coordinated, or not; involve extensive predetermined activity, or not; depend on fakery, deceit and illusion, or not. Rehearsal was a methodology for exploration, inculcation, and discovery, referential of real-world problems, like games; dependent upon real-world skills, like work; and addressing real-world fears, like ritual (Davis, 2007: 4).

For Davis, the exercise functions as a technique of governance seeking to elicit particular forms of subjectivity by "enacting a set of ideas though rehearsal imprinted behaviours upon the body, and in so doing created cognitive conditioning and a corporeal memory more likely to be reproduced in an emergency" (Davis, 2007: 85). "[T]he point", Davis concludes, "was

to become as effective as possible at coping in a future wartime crisis by normalizing it into routine while also practicing how to cope with the unexpected" (Davis, 2007: 90).

Like theatre, the effectiveness of the exercise is conditioned on its capacity to generate a suspension of disbelief amongst its players, who are simultaneously 'actors' and 'audience' (Davis, 2007: 70-77). To this end, verisimilitude is a primary consideration in the design of an effective exercise. In a preparedness exercise observed for the purpose of this project, it was evident that planners took great care in providing specific date, times, places and metrological conditions so as to contextualize the events triggering the exercise. Materials including maps, press statements, briefing reports were present while pre-recorded television news reports punctuated the exercise providing additional information or introducing a twist in the plot. The realism of the exercise is thus essential for conjuring the suspension of disbelief necessary for the tensions manufactured within the design of the exercise to take-hold. Some 'live' exercises have relied on even more elaborate methods for simulating realistic emergency events. *Amputees in Action* advertises that it has worked with Hazardous Area Response Teams (HART), the Health Protection Agency and Scottish Resilience.[83] The UK-based company offers professionally trained amputee actors for Emergency Services exercises and training courses (in addition to film and television roles) as well as a team of special effects, make-up, moulage and prosthetic artists "to enhance and extend the appearance and function of limb-loss scenarios".[84] The company slogan reads "De-sensitising, integrated life saving

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[83]See "Our Services", *Amputees in Action website*, http://www.amputeesinaction.co.uk/ourservices/ accessed 13 March 2012.
[84] See "Amputees in Action homepage" ", *Amputees in Action website*, http://www.amputeesinaction.co.uk/ accessed 13 March 2012.

your exercises as they should be" while a warning on the site reminds "Caution: Contains Graphic Scenes – Our Realism is your Strength". [85]

The importance of the element of surprise was stressed by one HART Incidence Response Unit (IRU) Simulation Lead in an interview in 2010. The IRU Simulation Lead operated a mobile training vehicle specifically fitted for the purposes of simulation. Two doors, located at the rear and side of vehicle permitted access to two different rooms. The first was used for monitoring the second, and was equipped with a small desk, monitors, speakers and a microphone. The second, appeared as a living room, occupied by a METIman[86]: a full-size mannequin, remotely operated and equipped with on-board fluid, pneumatic and electrical systems used for nursing simulations. By remotely controlling the METIman from the observation room, emergency planners can simulate a wide range of scenarios by controlling the speech, heart-rate, respiratory rate, blood-pressure, pupil dialysis, blink speed and even blood loss of the patient simulator. The IRU Simulation Lead explained that in simulating particularly complicated, and indeed gruesome, scenarios 'the idea is to introduce them to something against which anything else will pale in comparison' (Interview with Simulation Lead). But the emphasis is on conditioning the players to surprise. As such, he noted "[o]ther times you might walk in and it's just an old man sitting there watching TV" (Interview with Simulation Lead). By continually adjusting the nature of the exercise participants are not simply desensitised to catastrophic emergencies, but trained to constantly anticipate the unexpected whilst effectively operating within conditions of *uncertainty*. While the use of apocalyptic imagery (Schoch-Spana, 2004, 2008) and worst-case scenarios (Cf. Aradau, 2010)

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[85]See "Our Services", *Amputees in Action website*, http://www.amputeesinaction.co.uk/ourservices/ accessed 13 March 2012.
[86] See "METIman Nursing", *Medical Education and Simulation Website*, http://www.meti.com/products_ps_metiman.htm accessed 13 March 2012.

are no doubt relied upon, their use may thus be overstated within academic literature on emergency exercises.

This is especially true in light of budgetary restrictions imposed in recent years. As a result, UK Civil Contingencies has sought to increasingly rely on more economical genres of exercises such as table-top exercises and computer simulations instead of 'live' exercises. In addition to their varying costs, different genres may be more appropriate for exercising particular skills or training different Civil Contingencies personnel. All exercises however are similarly designed to simulate the experience of operating within an emergency event. Players are compelled to act-out their roles in order to simulate the experience of inhabiting an 'actual' emergency event (Adey and Anderson, 2012, Anderson and Adey, 2011b) so as to acclimatize the subject to decision-making within conditions of duress. As a site in which plans can be exercised and 'capabilities' trained into emergency responders the preparedness exercises ultimately aim to facilitate learning. More than just 'making futures present and actionable' (Anderson and Adey, 2011b: 1092), preparedness exercises simulate a history of crises in relation to which resilience may be fostered in anticipation of an actual emergency.

Perhaps as important as learning to perform one's duties within situations of duress is the fostering of confidence. Exercises are also used to augment the confidence of individuals and their trust in those they rely upon to perform their duties efficiently. To generate confidence, players must be pushed out of their comfort zones, challenged and tested. At the same time, these exercises would ultimately be self-defeating if they did not ultimately buttress the *confidence* of emergency responders in their own abilities, and *trust* in those of their colleagues. Exercises therefore must not be so difficult as to discourage participants. On the other hand, if exercises are too easy or predictable—if the unfolding of the scenario does

not sufficiently inject excitement—then the suspension of disbelief may be interrupted, and the effectiveness of the exercise undermined. As such, the careful design and modulation of the affective environment (Adey, 2008a, 2008b, 2009, Adey and Kraftl, 2008) of an exercise plays a very important role in ensuring the exercise functions to manufacture resilience amongst the players.

A primary way in which these atmospheres are modulated is through the manipulation of time. Exercises rarely proceed entirely in 'real-time'. More often they are cut into segments which focus on periods of high action, with the relatively calm period between these operations eliminated. Within these segments, the level of excitability of the players is modulated through adjustments in the 'battle-rhythm' of the event: the pace at which the emergency event to be responded to unfolds. 'Rising-tide' exercises look to put into play an event which reveals itself gradually, while 'sudden-impact' events appear more abruptly. Modulation of the battle-rhythm across segments provides differential periods of excitement and rest across the time-frame of the exercise. The need to fit the time frame of the exercise into a pre-established working day also provides its own challenges. In the preparedness exercise observed for this study, for example, players responded to a simulated plane crash in a major British city. The exercise's designer explained that simulating an airline accident provided the requisite complexity to exercise all those functions which would be required in a terrorism simulation. When asked why they did not simply simulate a terrorist attack, he explained that the excitement elicited by a terrorist attack would run the risk of swelling the response beyond the temporal and pedagogical boundaries set out within the exercise design. Resources had been allocated for an exercise to be completed in one day, over approximately six hours.

While preparedness exercises undoubtedly serve to induce corporeal memory and cognitive conditioning (See Davis, 2007) the extent to which they aim to impose an instrumentalised regime of actions upon the subject is questionable (Adey and Anderson, 2012, Cf. Aradau, 2010: 6). While opportunities for creativity and heroism are marginalized the purpose of these exercises is not to produce automatons, unthinkingly activated prescribed protocols. Preparedness exercises are principally geared towards the habituation of decision-making within conditions of duress and uncertainty. The focus of preparedness exercises is less on the routinisation of actions and more on exercising the capacity to make *decisions* under duress. As such, scenarios may function differently from those associated with the War Books of the Cold War, which prescribed strict protocols in the lead-up to nuclear release.[87] Disciplinary controls witnessed within the emergency exercises observed were relatively loose, permitting some measure of 'play' as players negotiated which plans to operationalise based on only the limited information collected within an emergent event. Within the context of Integrated Emergency Responses of UK Civil Contingencies, responders at all levels must learn to quickly collect and synthesize varied sorts of information, and then use this information to arrive at decisions regarding the specific plans to activate, responders to mobilize and agencies to inform. If successful, these decisions would set in motion the construction of a governmental machinery specific to the demands of a unique and emergent event capable of resolving the crisis before it amplifies to a 'catastrophe' (Aradau and Van Munster, 2011).

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[87] The British War Books of the Cold War have recently been declassified and can be located in CAB/175. The War Book outlined the responsibilities of ministers and officials in each of three stages leading up to nuclear war (pre-Precautionary Stage matters, the Precautionary Stage, and War) and had to be continually revised based on diminishing estimates of the time it would take for international tensions to escalate to the point of nuclear release. See in particular CAB/175/2 on Exercise Felstead.

Thus, while exercises play a fundamental role in providing feedback on plans, they also aim to foster the human faculties of resourcefulness, flexibility and autonomy. As such, they resonate not only with efforts to optimize network-centric warriors (O'Malley, 2010a), but wider trends in the 'responsibilising' of subjects to manage their own risks (Dean, 1999, Rose, 1996a, O'Malley, 1996, O'Malley, 2004). Exercises aim to fashion subjects capable of operating within a turbulent and uncertain world. They seek to elicit a way of being-in-the-world which is not only confident in the ability to persevere through risk but which might even 'embrace risk' (Baker and Simon, 2002). Indeed regular exercises have the effect of inducing a disposition of permanent preparedness and, as such, can be regarded as useful in both "stimulating and disciplining the imagination" (Khan in Lakoff, 2007). Manipulation of the affective disposition of the subject for 'training' purposes creates autonomous subjects while simultaneously exposing the subject more fully to technologies of governing though risk.

The Chronopolitics of Resilience

In the previous chapter I showed how the resilience strategies of UK Civil Contingencies operate to rapidly foreclose a crisis. What resilience strategies therefore aim to achieve is neither the elimination of threat nor protection from its effects, but the mitigation of the consequences of the emergency event. As such resilience provides a risk-based form of security. However, insofar as resilience also implies processes of recovery and regeneration, resilience discourses are imbued with a specifically temporal element. Resilience strategies secure against an event by ensuring a crisis does not escalate to an emergency (Anderson and

Adey, 2011a, Anderson and Adey, 2011b). Speed is as integral in this regard as mitigating exposure to threats through risk-based techniques: coordinating agencies so as to quickly close-down the crisis and re-establish 'normality'. Resilience can be understood as a security strategy aimed at optimizing the conditions of emergence of a population to quickly and efficiently adapt to and rapidly close down the duration of the crisis event and restore the linear, historical time of standard political processes. As we have seen in our discussion thus far, accelerating emergency responses requires governance to elicit 'resilient subjects'. In this final section I will discuss the political and ethical implications of resilience strategies. To do so I draw on the writings of several theorists on the politics of 'the event' and discuss the role of sovereign in responding to the event through a discussion of Shakespeare's Hamlet.

In *The Writing of Disaster,* Blanchot wrote of the non-representable status of the disaster. "The disaster, unexperienced. It is what escapes the very possibility of experience--it is the limit of writing. This must be repeated: the disaster de-scribes" (1995: 7). For Blanchot, the disaster evades intellectual capture: it cannot be thought precisely because it is that which disestablishes thought.

> Inasmuch as the disaster is thought, it is nondisastrous thought, thought of the outside. We have no access to the outside, but the outside has always already touched us in the head, for it is precipitous. The disaster, that which disestablishes itself--disestablishment without destruction's penalty (1995: 6).

The disaster, for Blanchot, is an event which evades intellectual representation and disrupts thought. A similar characterization was used by Derrida during an interview subsequently published under the title *Autoimmunity: Real and Assisted Suicides* in describing September 11th as a 'major event': "an event that would bear witness, in an exemplary or hyperbolic

fashion, to the very essence of an event or even to an event beyond essence" (2003: 90). Derrida suggests that the identification of a 'major event' is related to its capacity to exceed, and potentially disrupt, existing frameworks of intelligibility.

> "The undergoing of the event, that which in the undergoing or in the ordeal *at once opens itself up to and resists experience*, is, it seems to me, a certain unappropriability of what comes or happens. The event is what comes and, in coming, comes to surprise me, to surprise and to suspend comprehension: the event is first of all *that which* I do not comprehend. Better, the event is first of all *that* I do not comprehend....--my incomprehension" (Derrida, 2003: 90, transcriber's emphasis).

The major event for Derrida is precisely that which resists intellectual appropriation. Alluding to the two faces of the event, Derrida suggests that a major event is so-designated in respect of its incomprehensibility. As such, the major event corresponds to the opening of meaning. By offering a problematisation the major event provides an opportunity for *thought*. It "calls for a movement of appropriation (comprehension, recognition, identification, description, determination, interpretation on the basis of a horizon of anticipation, knowledge, naming and so on)" (2003: 90). We are compelled by this disruptive event to try and capture it within a name, a date and, in particular, a meaning. These efforts, however, will always be insufficient. The negative ontological status of the event precludes the designation of any meaning, leaving any effort to provide one necessarily underdetermined.

Blachot's account of 'the disaster' and Derrida's definition of 'the major event' align in this respect with contemporary understandings of psychological trauma. Caruth explains that Post-Traumatic Stress Disorder (PTSD) is a condition borne from "the confrontation with an event that, in its unexpectedness and horror, cannot be placed within the schemes of prior

knowledge" (1995: 153). The experience of this initial trauma continues to disrupt into later life. Young explains "PTSD is a disease of time. The disorder's distinctive pathology is that it permits the past (memory) to relive itself in the present, in the form of intrusive images and thoughts and in the patient's compulsion to replay old events" (Young, 1997: 7). As a disease of time, PTSD shares the temporal structure of a haunting insofar as "One cannot control its comings and goings because it *begins by coming back*" (Derrida, 1994: 11). PTSD is treated with both pharmacotherapy and psychotherapy (Young, 1997: Ch. 6). While most psychotherapeutic methods aim to build the subjects capacity to handle disruptive episodes, psychodymanic therapy aims to "restructure the contents of the traumatic memory, to the point where the patient is able to integrate it into his ongoing view of the self and make it bearable in consciousness" (Young, 1997: 179). Parallel, proactive efforts are now being taken within resilience training programmes of the American ('Comprehensive Soldier Fitness') [88], Australian (BattleSMART (Self-Management and Resilience Training)), British ('Trauma Risk Management (TRiM)') [89] and Canadian (Military Resiliency Training Program (MRTP)) militaries (O'Malley, 2010a). These programmes aim to provide emotional training to soldiers prior to deployment so as to equip them with the emotional acumen to better psychologically process events experienced in the field which might otherwise contribute to the onset of PTSD.

Resilience may be theorized as a security strategy of which seeks to pre-empt the 'major event'. It is a security logic rooted in de-eventalization. Resilience programmes aim to rapidly foreclose the emergency event, by limiting its devastation and minimizing its duration. By acclimatising emergency responders to crisis, preparedness exercises operate within

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[88]"Comprehensive Soldier Fitness" *US Army* http://csf.army.mil/ accessed 26 March 2012
[89] "Trauma Risk Management (TRiM)" *British Army* http://www.army.mod.uk/welfare-support/23245.aspx accessed 26 March 2012

dangerous and uncertain worlds. Rather than inciting reflective thought on the 'meaning' (or

lack thereof) of the disaster itself, preparedness exercises habituate responders to focus on

their responsibilities during a crisis, invoking a regime of instrumental actions and decisions.

The demand to arrive at a decision quickly closes out the possibility of reflective thought.

The ideal time of the decision is instantaneous. Decision becomes reflex. In his analysis of

the political implications of globalisation's temporal compression (Virilio, 2005: 13, see also

Virilio, 1977, 1999), Paul Virilio developed the term 'chronopolitics' to refer to the

consequences of the insistence on speed to processes of deliberation, negotiation and debate

associated with contemporary liberal democracy:

> "The tyranny of real time is not very different from classical tyranny, because it
> tends to liquidate the reflective capacity of the citizen in favour of a reflex
> action. Democracy is about solidarity, not solitary experience, and humans
> need time to reflect before acting. Yet the real time and global present requires
> on the part of the telespectator a reflex response which is already of the order
> of manipulation." (Virilio, 1999: 87).

The chronopolitics of resilience follows from the security logic it enacts in relation to

the event-time of a disaster, rather than the geopolitics of space. De-eventalisation serves to

buttress the political order. Jenny Edkins has argued that "[m]emory, and the form of

temporality that it generally instantiates and supports, is central to the production and

reproduction of the forms of political authority that constitute the modern world" (Edkins,

2006: 101). Across a series of writings she has analysed how 'trauma time'—the disruptive

time of the 'major event'—acts to disrupt the linear narratives of history underpinning

sovereign power (Edkins, 2003, 2006). In the wake of a traumatic event "what we call the

state moves quickly to close down any openings produced by putting in place as fast as

possible a linear narrative of origins" (Edkins, 2006: 107). The ability of 'the state' to weave these traumatic events into the linear narrative supportive of political power serves to continually re-constitute the state in the wake of potentially destabilizing traumatic events (Edkins, 2002, 2003). In doing so, it may encounter resistance from those preferring that the meaning of such events remain open and with them, the indeterminacy of the political meaning they harbour.

This sovereign act is exemplified within the Shakespearean tragedy *Hamlet*. Hamlet is compelled within the play to respond to crimes committed by his uncle Claudius who has killed Hamlet's father and taken Hamlet's mother as his wife. The disruption provoked by these crimes to the established order leads Hamlet to comment that "the time is out of joint" and curse his fate: "that ever I was borne to set it right" (as quoted in Derrida, 1994: 1). Deleuze has explained

> "The joint ensures the subordination of time to those properly cardinal points through which pass the periodic movements which it measures (time, number of the movement, for the soul as much as for the world). By contrast, time out of joint means demented time, or time outside the curve which gave it a god, liberated from its overly circular figure, freed from the events which made up its content, its relation to movement overturned; in short, time presenting itself as an empty and pure form. Time itself unfolds...instead of things unfolding within it" (1994: 88).

The moral and political orders which uphold Hamlet's world are supporting by the chronological unfolding of events *within* time. This chronology however has been disrupted by 'an empty and pure form of time' which Deleuze has elsewhere analyzed in relation to the Stoic concept Aion (Deleuze, 1990a). Moreover, it places both Hamlet's reality and his identity in jeopardy. To honour his father and restore his proper identity Hamlet must avenge

these crimes and set things right. Hamlet must act to restore the order of things by operating within a 'time out of joint' to re-establish historical time and the historical lineage bequeathed to him. Hamlet must paradoxically realign time by acting within a 'time out of joint' to restore the linear, narrative time of sovereign power by laying the foundation for a new chronology. It is not trivial to note that sovereign violence is implicated in the restoration of a moral and political code. To assert and reclaim his identity as one belonging to the old order Hamlet must also, paradoxically, defy this moral order by killing his uncle. In this sense, Hamlet's decision displays the priority of the political force, located within a sovereign response to 'the exception', in the constitution of an order upon which this power is said to derive (see Schmitt, 2005).

For Deleuze, Hamlet responds to this 'time out of joint' in a manner 'worthy of the event' (see Deleuze, 2004: 169). Hamlet must relinquish both habit and memory, which smooth out paradoxes and provide for the subject a linear historical narrative in which time can be understood as a coherent whole, in forming his decision (Deleuze, 1994: 88-91). Instead, he must act based on engagement with an 'empty', virtual past which exists prior to the representation of events within a narrative order. He must draw on the potential contained in this virtual past to perform an action which can only be measured in reference to an order which is yet to come. To restore the order of things in which his proper place can be discerned, Hamlet is forced to sacrifice the coherence of his own identity. To be worthy of the event is to respond to the event as a dynamic, unpredictable force of becoming in which the subject is actualized through divergent series, rather than through series yielding a coherent identity (Deleuze, 1994: 89-91).

A time out of joint disturbs our capacity to order our lived experiences within a narrative chronology though which meaning (and thus status) can be derived. In doing so, it is also an opportunity to become something new. Responding in a manner worthy of the event requires relinquishing with the stable identities underpinned by linear, chronological time which are always inadequate to the singularity of actual experiences. Instead, an affirmation of life as creative becoming requires one to 'learn how to live' in a time out of joint (Derrida, 1994: xvi-xx). In this way, Derrida in *Spectres of Marx* has analyzed 'time out of joint' as an opportunity for justice. The disjuncture represented by a time out of join is the 'place of justice' insofar as it "opens up the infinite asymmetry of the relation to the other" (Derrida, 1994: 26). An ethical decision is required in response to the disjuncture caused by crimes which, even though one did not commit them, nevertheless continue to haunt the present. An ethical decision is one made from a location of groundlessness and uncertainty which should not be closed it down through the activation of instrumentalised legal rules or 'moral recipes' (see also Nancy, 2005).

As a security strategy, the resilience operations of UK Civil Contingencies rest on a precarious balancing act. On the one hand, resilience strategies aim to optimize its conditions of adaptive emergence for liberal life. Here, evolutionary fitness is the key to instantiating the transformative mutations necessary to avoid risks, and capitalize on profits, within dangerous and chaotic security environments. However, by simultaneously acting to rapidly close down the emergency event and inhibit the capacity of such an event to precipitate a 'major event' in thought, its capacity to *truly* create new forms of life—new ways of 'being-in-the world' (Heidegger, 2010)—is compromised. This is not an unintended effect. The contingency and unpredictability of life's becoming, especially when amplified through resilience programmes,

risks provoking political and economic instability by inciting the actualization of that which is truly new: new values and modes of being which cannot be circumscribed within liberal capitalist frameworks. The resilience discourses of UK Civil Contingencies are thus haunted by the sovereign dream of asserting control over liberal life's emergent becoming. The championing of diversity is circumscribed to forms of life which do not challenge the values of liberal governance, and the diversity of enterprise required for the continuity security of economic profit. A Nietzschean project of generating forms of life which enact new values sacrificed for to ensure the promotion and protection of the singular value of profit by diverse economic enterprises.

Yet, this balance is tenuous at best. Enhancing the conditions of adaptive emergence for liberal life always risks the production of novel forms of life and the empowerment of those forms of life inimical to liberal life. In respect of this precarious instability at the heart of resilience strategies, I believe resilience discourses may in fact harbour the potential for positive critique. This will be elaborated upon in the conclusion of this study.

Conclusion

The resilience of telecommunications infrastructures is critical to enabling the emergent self-organization of emergency responses conducted by UK Civil Contingencies. In the event that one or more of these critical infrastructures enabling liberal life is compromised, emergency responders must be assured of the continued circulation of information, people and resources utilized by the emergency services and necessary for the provision of essential

services. Resilient telecommunications has thus emerged as a core preoccupation of UK Civil Contingencies where it is recognized as a 'fundamental enabler'[90] for UK resilience more broadly understood, as well as a condition of operability for advanced liberal economies Yet, the contemporary problematic of ensuring informational superiority translates into decisional superiority means that telecommunications 'solutions' cannot be relied upon alone. The government of emergencies responders is an important, but under-theorized element, of building UK resilience. This chapter has investigated preparedness exercises as a technique of governance aiming to nurture and promote 'resilient' subjectivities. Its aim is to elucidate the governmental rationalities operating within UK Civil Contingencies through an analysis of the practices of governance seeking to fashion resilient subjects.

Preparedness exercises are used extensively within UK Civil Contingences as a means to test emergency response plans, exercise the faculties required within a response and develop staff competencies in preparation for an unknowable future event.[91] As a technique of governance preparedness exercises aim to foster resilient subjectivities and accelerate emergency responses by simulating high-tension environments in which decision-making under duress may be exercised. In the process, the subject is 'responsibilised' by having learnt how to arrive at decisions confidently and quickly within uncertain and turbulent environments, allowing them to be autonomous and 'free'. Governance here is not interested in the production of production of automatons, rapidly activating pre-scripted plans. Rather, governance is directed towards conditioning the subject to operating within conditions of uncertainty. As such, the governance of resilience operations shares a diagram of power

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[90] 'Introduction to Resilient Communications' *Cabinet Office Website,* http://www.cabinetoffice.gov.uk/ukresilience/preparedness/resilient_telecommunications.aspx accessed 13 March 2012

[91] 'Exercises' *Cabinet Office Website, http://www.cabinetoffice.gov.uk/ukresilience/preparedness/exercises.aspx* accessed: 13 March 2012.

associated with neoliberalism (see chapter 3) in which power is directed towards optimizing the conditions of emergence, rather than determining the trajectory, for what are considered natural and highly efficient emergent (social, cognitive or technological) processes.

An analysis of the rationality of governance enacted within preparedness exercises the forms of subjectivity currently valorized as 'resilient'. As such, it alludes to a mode of valuing life understood, evaluated and problematised in respect of its capacity for adaptive emergence. In considering the politics of resilience, we should be attentive to the fact that every valuation simultaneously devalues (Dillon and Lobo-Guerrero, 2009). The valorisation of resilient lives (re-)problematises, and depreciates, forms of life deemed not resilient, or adaptive, enough. Recognition of this fact should compel us to ask: what then happens to life which is not adaptive? Life which cannot adapt? Life which refuses to adapt? Life which strategizes political resistance in terms of its refusal to adapt? It should make us attentive to the ways in which this regime of valuation reinforces or departs from former ways of problematising these referents. How, for example, have the introduction of resilience discourses within the field of international economic development (See Nsouli, 1995, United Nations Development Programme, 2004, United Nations Environment Programme, 2004, Verner and Egset, 2007, International Monetary Fund, 2010) served to reinforce longstanding problematisations surrounding conditions of poverty and insecurity within underdeveloped states in new ways? How are patterns of political exclusions being remapped in the process and strategies of political resistance refigured? Similar questions must also, of course, be asked in the context of 'developed' liberal states most enthralled with resilience discourses and the speciation they advance.

One must therefore be aware of the inherent ethical implications of any speciation of life: that any regime of valuation, depreciates as much as it appreciates; that any process of classification determines what is to be excluded, as much as included; and that securing one form of life, more than often entails placing into jeopardy those forms which do not conform or are found inimical (Dillon and Lobo-Guerrero, 2008, 2009). One must acknowledge, moreover, that speciations are resisted at the ontological level even before they are politically (Dillon and Lobo-Guerrero, 2009); that life itself cannot be reductively enframed within a single speciation because life is itself, incalculable and invaluable (Nancy, 2005, Dillon and Reid, 2009: Conclusion). Bearing in mind these important considerations, I would suggest that inherent instability of resilience discourses offer an opportunity for a positive critique of resilience which does not simply denounce them as 'bad', but looks to exploit the potentials harboured within their underlying epistemic frameworks for forging new lines of resistance and critique. The outlines for such a project will be elaborated upon in the conclusions of this study.

Conclusion

> But a stronger force grows out of your values and a new overcoming; upon it egg and eggshell break....
> And may everything break that can possibly be broken by our truths! Many a house has yet to be built!
> (Nietzsche, 2006, 'On Self-Overcoming': 90)

In recent years, resilience discourses have proliferated in a range of fields engaging with the common problematic of providing security within environments characterised by the radical contingency of threats. This thesis has argued that resilience is a value which now constitutes an emergent telos for liberal security initiatives. Recognizing the singularity of resilience in distinction to the value of stability which had formerly guided liberal security initiatives this thesis has addressed the question, 'how do we account for the emergence of resilience?' A response is offered by way of a biopolitical genealogy of resilience. A genealogy is a critical study of the historical conditions of emergence of values. Utilizing a biopolitical analytic, this thesis has demonstrated that the value of resilience has appreciated alongside transformations in the order of power/knowledge enacted by apparatus of security. Resilience is not a natural phenomenon, but the correlate of a particular speciation of life enacted by the practices and rationalities of neoliberal governance. Specifically, resilience constitutes a means of valuing life understood and assessed in terms of its evolutionary 'fitness' or capacity for complex emergence.

This thesis problematises those accounts—dominant within governmental and specialist resilience literatures—which explain the advent of resilience strategies on the basis of a scientifically validated re-evaluation of the referents of security. Within these accounts, resilience is understood as a natural function of complex self-organizing systems, including social systems. Such accounts have served to legitimize the adoption of resilience strategies in the field of UK emergency planning and response. Since 2001, the Civil Contingencies Secretariat has been mandated with optimizing the resilience of those systems supporting, or constitutive of, liberal life. By seeking to facilitate and optimize the 'natural' self-organizational processes of social systems, resilience strategies have been celebrated as indicative of a growing humanism in emergency governance and a greater commitment to human 'freedom'.

Tracing a biopolitical genealogy of resilience, this thesis problematises these accounts by demonstrating that the value of resilience is the product of much more complex historical processes and significant governmental effort. Firstly, resilience is shown to be the *product,* rather than the cause, of a broader restructuring of the rationalities and practices comprising liberal governance. These transformations are traced within the empirical field of UK emergency planning and response. Resilience is shown to be the expression of a neoliberal order of emergency governance which emerges in concert with transformations in the biopolitical order of power/knowledge enacted by apparatus of security. Resilience is not natural, but the correlate to an ontopolitical speciation of life in which species-life is understood, valued, and problematised in terms of its capacity to adaptively self-organize as a response to crisis.

Secondly, the natural status of resilience is undermined by the extent to which it has depended upon, and continues to require, considerable governmental intervention for its realisation. Resilience programmes continue to require significant investments of time, money, planning and training. The British state, through its coordinating body UK Civil Contingencies Secretariat, has taken a lead role in this regard. Rather than signalling an abnegation of the state of its historical duties to provide security, the advent of resilience strategies has re-inscribed the state. Security governance is reoriented from protection to preparedness: promoting 'resilient subjectivities' and optimizing the conditions of adaptive emergence. Rather than operating in conditions marked by the absence of government, resilience strategies are premised on significant government effort to produce the conditions within which 'freedom' may be exercised.

The introduction of this thesis outlines the problem-space and the methodological approach to this investigation. Each subsequent chapter thereafter analyzes an event in relation to which this neoliberal order of governance consolidated. In each case, these events are studied as problematisations of the established order which opened a space for the application and refinement of techniques of governance which would, over time, be forged into a neoliberal order of governance committed to the realisation of resilience.

Chapter 1 investigated the institutionalization and early development of a British machinery of governance for managing emergencies. It established the biopolitical imperative of this machinery in respect of its mandate to secure the 'essentials of life' which it showed corresponded to a militaristic enframing of 'life' forged within the context of total war. Secondly, by investigating how the 'essentials of life' were secured, this chapter discerned the emergence of a 'scientific' order of governance for managing contingencies. Underpinning

this scientific order was an imaginary of contingency rendered calculable in the form of risk which was amenable to 'scientific' forms of management. Taken together, these two lines of inquiry demonstrated that these imaginaries of uncertainty correlated with distinct speciations of life enacted by biopolitical machinery of emergency governance.

Chapter 2 investigated the problematisation of this 'scientific' order in relation to challenges borne by the advent of thermonuclear weaponry and the threat it posed to the survivability of the British nation in the context of the Cold War. It began by making explicit the common matrix of governmentality underpinning British post-war Civil Defence and the British Welfare State characterized by a responsibility of the state to protect 'the social' from the dangerous anxieties which threatened its dissolution. Focusing on the reparational form of security provided by insurance technologies (Lobo-Guerrero, 2011), this chapter traced a line of flight (Deleuze, 1992) from the security logics underpinning the British Welfare State to that enacted by post-Strath Civil Defence logics which focused on the security of a 'way of life', rather than the material body. Post-Strath Civil Defence plans were rooted in a logic of preparedness in which the prospect of survivability was manipulated to enable and promote the confidence required to operate within dangerous and uncertain worlds.

Chapter 3 links these governmental techniques to the creation of a new epistemological order by investigating the development of resilience discourses within the complex ecosystems theory of the 1970's. Comparing the programme of governance advanced within these discourses to that being advanced by neoliberal critics of economic Keynesianism at that time, this chapter makes explicit the order of governance shared by resilience strategies and neoliberalism. Tracing the historical co-evolution of ecology and economics, this chapter showed that this order of governance operates in relation to an imaginary of nature no longer

defined in essentialist terms, but in respect to multiple, emergent equilibria and fluctuating stability domains. This shift in the archaeological structure of knowledges pertaining to the natural marks a radical departure from the imaginary of nature corresponding to classical ecology and liberal economics, indicating the emergence of a new epistemological order, affirmed by, and supportive of, neoliberalism.

Chapter 4 detailed the operationalisation of resilience strategies within the realm of state security. It traced a genealogy of the concepts and strategies utilized within the Integrated Emergency Management (IEM) operations of UK Civil Contingencies to those developed within the Revolution in Military Affairs (RMA). The application of these strategies was made possible by the common security problematic of the radical contingency of contemporary threat shared by the military and UK Civil Contingencies. Resilience is theorized as an emergent security strategy which aims to optimize the performative adaptability of a range of complex systems to withstand, reorganize and regenerate quickly and efficiently in the wake of a potentially catastrophic event in order to minimize disruption to British life. As such, resilience is a value which corresponds to a particular speciation of life focused on the capacity to rapidly adapt to, and evolve *through,* crises.

Chapter 5 investigated the governmental rationalities designed to promote 'resilient subjects' through a concerted study of UK Preparedness exercises. Exercises demonstrate that technological solutions to resilience must be supplemented with programmes of governance to optimize the speed and effectiveness of resilience operations. Investigating Preparedness exercises as a technique of governance revealed how the value of resilience is enacted within the governmental rationalities informing contemporary UK Civil Contingencies. In particular, the techniques used to elicit resilient subjects were analyzed to understand how subjectivity is

understood, valued and problematised within these discourses. Resilience is theorized as a security strategy which aims to optimize liberal life's conditions of emergence to quickly and efficiently adapt to, and rapidly close down, the duration of the crisis event and restore the linear, historical time of standard political processes. The sovereign desire to maintain control over processes of emergent-becoming effects a tension within resilience strategies which seek to optimize processes of adaptive emergence whilst inhibiting the capacity of events to elicit forms of life supportive of values divergent from, or opposed to, liberal values.

Methodologically, the critique of values performed by this genealogy directly responds to Peter Burgess' provocation for Security Studies to take values seriously (Burgess, 2011). While values have never been foreign to the study and pursuit of security (where they are invoked to orient, support, legitimise, and critique security practices), they are too often taken to pre-exist, and by extension, provide a foundation for, particular security initiatives. To the extent that values are understood to precede security practices, they also serve as the basis upon which security policies may be evaluated and judged. The foundational role afforded to values presents the politics of security as a negotiation, debate or sometime even struggle between the legitimate and illegitimate values upon which to base security practices (e.g. realism v. liberalism in International Relations), the deserving and undeserving 'referent objects' of security (e.g. 'the environment', 'the human'), and the just balance between liberal values (e.g. freedom, human rights and security). Here, it has been noted, the security expert is one who can advise as how to best secure those values whose value was taken as axiomatic (Dillon, 1996: 20-21).

Yet in important ways security initiatives do not simply follow from predetermined values. Security itself has long been recognized as a principle value in relation to which liberal

governance is oriented and legitimized (Baldwin, 1997, Wolfers, 1962, Foucault, 2007, 2008). It is the foundational value of Western political theory (Hobbes, 1996) and International Relations (Booth, 1994, Waltz, 1959, 1979). Many have questioned the value of security, not least in light of the paradoxical 'dilemma' (Herz, 1951) surrounding the radical insecurity which security initiatives inevitably produce (Der Derian, 1993, Foucault, 1998, Wæver, 1995). Genealogical studies have critically interrogated the value of security by inquiring into the processes through which security has become axiomatic within Western political theory and practice (Der Derian, 1993, Dillon, 1996). This study has taken inspiration from these studies but has developed its genealogical method differently. Security is not analyzed as a value, but as an apparatus (dispositif) comprising a heterogeneous assemblage of discourses and practices oriented towards historically and socially contingent problematics. As an apparatus, there is nothing essential about security with regards to either its meaning or its value. Rather than focus on security as a value, this study is interested in the *values* which constitute the telos of historically situated security apparatus. These values are not the primary focus of the study however, but are used as a means of exploring historical transformations in the rationalities and practices of security.

As a genealogy, the primary aim of this thesis has been to problematise the self-evidence afforded to the value of resilience by identifying the complex historical processes, and significant governmental efforts, underpinning its realisation. By counter-actualizing those hegemonic narratives which obscure the process through which the value of resilience has appreciated this study has sought to open a space from which the political and ethical implications of these strategies may be more vigorously questioned and debated. As such, it

does not present any definitive conclusions. I may suggest however, areas where this research has opened a problem-space which invites further research and political action.

Conceptualizing resilience as a value marks an original contribution to resilience literature with implications for future research. As a value, resilience may be understood to accommodate distinct 'concepts' of resilience promoted by contending orders of governance. Ambiguity surrounding notions of resilience, I would suggest, is neither the result of a lack of conceptual clarity, nor is it simply a product of the diverse disciplinary genealogies of present day resilience discourses. The equivocality of resilience is a product of the co-presence of distinct orders of governance subscribing to divergent telos of security, reflected in the 'meanings' of resilience they seek to determine. As such, complexity approaches have not supplanted those rooted in systems theory. As Foucault repeatedly insisted, successive regimes of power do not eradicate previous ones:

> So, there is not a series of successive elements, the appearance of the new causing the earlier ones to disappear. There is not the age of the legal, the age of the disciplinary, the age of security. In reality you have a series of complex edifices in which, of course, the techniques themselves change and are perfected, or anyway become more complicated, but in which what above all changes is the dominant characteristic, or more exactly, the system of correlation between juridico-legal mechanisms, disciplinary mechanisms, and mechanisms of security (Foucault, 2007: 8).

In recognizing the layering of these orders of governance into historical strata, we should be cautious of offering teleological accounts of the historical destiny of complexity approaches to inevitably succeed in this contest. History rarely proceeds in such an orderly linear fashion. Certainly, the contemporary governmental fascination with the 'nudge'[92] agenda suggests the

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[92] The 'nudge' agenda, inspired by Thaler and Sustein's book *Nudge* (2008), promotes governmental assistance in improving individual choice making by 'nudging' people towards choices that are 'best' for them. It has been

revival of paternalistic forms of governance to supplement neoliberal approaches to resilience. Employing an approach which investigates resilience as a value would therefore entail sensitivity to the dynamics underpinning particular resilience discourses—the ways in which the co-presence of these orders may at times be mutually reinforcing and other times cause tension—within emergency planning and response and elsewhere.

This approach may be particularly useful for investigating the application and development of resilience discourses within empirical fields including international economic development, community resilience programmes, ethnographies of Preparedness exercises and military psychology programmes related to the prevention of Post-Traumatic Stress Disorder (PTSD). Indeed, this genealogy invites more detailed study of empirical sites to witness resilience discourses in the making. How are these discourses understood, applied, transformed? How are they negotiated and where do they breakdown? Further study, based on a conceptualization of resilience as an emergent security value, should also be performed in relation to transformations in the economy of valued lives which have accompanied the advent of resilience discourses. What forms of life are being valued/devalued? How are lives, practices, communities being (re)problematised? How does this reinforce/depart from former systems of valuation? Such investigations would be beneficial in respect to both resilience programmes developed in liberal states and those being introduced in respect of the underdevelopment of the global south (See Nsouli, 1995, United Nations Development Programme, 2004, United Nations Environment Programme, 2004, Verner and Egset, 2007, International Monetary Fund, 2010).

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taken up within the UK Cabinet Office, the Prime Minister's Behavioural Insight Team (aka. the 'nudge unit'), and the Royal Society for the Arts' Social Brain project.

Second, this genealogy has implications for advancing critical research which has already begun to explore the connections between resilience and neoliberalism (Cooper, 2011, Cooper and Walker, 2011, Dillon and Reid, 2009, O'Malley, 2010a). By drawing on a biopolitical analytic, this thesis demonstrates that criticisms which focus on the state's abnegation to provide security (see Duffield, 2011, Reid, forthcoming) fail to recognize the ways in which resilience discourses re-inscribe the state. This has the undesirable, if unintended, effect of reinforcing the claims of resilience advocates that resilience is a strategy based on the natural capacities of populations to operate in the absence of government. By contrast, this thesis has detailed the ways in which resilience has necessitated, and continues to rely upon, significant governmental effort to be made possible. While this may coincide with a reduction in the State, this thesis shows that it does not coincide with any diminution in governance. Resilience re-inscribes the State within a project which aims to optimize the conditions of possibility for life understood in terms of its capacity for complex emergence. While governance may be directed to new objectives and operate upon different surfaces, it is nevertheless present. In making explicit the neoliberal order of governance enacted within resilience discourses as well as the epistemological order to which it is an actualization this thesis aims to advance theorization of both resilience and neoliberalism as governmental projects in terms of their positivity.

Finally, I have suggested that the epistemological order supportive of resilience discourses might be exploited through the development of a positive critique of resilience. I have argued that the resilience strategies operating within UK Civil Contingencies rest on a precarious balance premised on the maintenance of sovereign control over the trajectory of emergent becoming. Governance here seeks to simultaneously optimize processes of creative

emergence whilst trying to ensure that this does not empower, or elicit, forms of life which dismiss or reject established liberal capitalist values. A positive critique would not limit itself to denouncing resilience discourses as bad, in order to open a search for alternatives. It is not reactionary. Rather, a positive critique would be rooted in the affirmation of the critical potential already harboured within the epistemological supporting resilience discourses. It would advance through counter-actualization: mobilizing the critical potential of the regime of truth affiliated with resilience strategies towards new ends, and the creation of new values. Bearing in mind the ethical and political implications associated with any speciation of life, a positive critique of resilience would proceed pragmatically to exploit resilience discourses in ways which problematise, and destabilize, established regimes of power relations. Pragmatic strategies such as these have proved successful in the past. Recall, for example, how Christian discourses were mobilized to articulate political demands based on the notion of equality in the colonies.

A positive critique of resilience should be rooted in an insistence that we have hardly even begun to pursue, or even desire, resilience. For the highest articulations of resilience recognize that it is not synonymous with self-preservation, but with self-overcoming. Affirming resilience must therefore entail a commitment to liberating resilience discourses from their current labour of ensuring the self-preservation of liberal life and inserting it into a radical project to forge new ways of life. Affirming resilience would mean inverting the function by which the value of resilience is measured by its capacity to secure predefined British values, and placing resilience in the service of consolidating a political community around the pursuit of new values: A political community defined not in terms of who we *are*, but in reference to what we *could be*. At a time in which myopic security policies are tearing

at the fabric of British society, creating in themselves the conditions of fear, exclusion and insecurity which breed the very dangers this costly security apparatus seeks to manage, it is imperative that a consideration of community be given greater weight within security discourses and security studies. A resilient Britain may be better defined in relation to the strength demonstrated, and indeed *gained*, from the cohabitation of communities enacting distinct, and not always harmonious, values.

This, however, is just one example of how resilience might be more productively affirmed. How, and where, resilience discourses might be creatively formulated to advance positive critiques exceeds my own individual capacities, and is nonetheless beyond the scope of this study. This thesis has offered as a genealogical critique of the value of resilience, and in doing so, sought to open a space within which the creative cultivation of such tactics might begin to be formulated.

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