

From 'Shock and Awe' To '7/7': Attacks on Infrastructure as a Lens For
Understanding the Contemporary Urbanisation of Warfare

Martin Coward

University of Sussex [m.p.coward@sussex.ac.uk]

Prefatory note

The following paper comprises two elements that may have some dissonance in combination. Firstly, the majority (pages 2-29) comprises the bulk of a paper examining the urbanisation of security through the lens of attacks on critical infrastructure. This paper was intended to address the wider question of the specifically urban inflection of the security agenda in the contemporary period. It proposes to illuminate contemporary urbanisation through an examination of the vulnerabilities and (in)securities exposed by attacks on critical infrastructure. It concludes with an examination of the networked, complex ecology of subjectivity that I refer to as 'metropolitan life'. Secondly, a short coda attempts, for the purposes of the first ESRC Contemporary Biopolitical Security seminar, to sketch (in very brief outline) my thoughts on the circuits of mobility that characterise such metropolitan life. I also offer a schematic reflection on the bio-politics of securitising the metropolitan life outlined in my account.

The Urbanisation of Security

Sometimes it takes just one human being to tip the scales and change the course of history. In the year 2007, that human being will either move to a city or be born in one. Demographers watching urban trends will mark it as the moment when the world entered a new urban millennium, a period in which, for the first time in history, the majority of the world's people will live in cities.

(UN-HABITAT, 2006: viii)

The announcement by UN-HABITAT of the arrival of the urban millennium masks the complex processes of demographic change that have contributed to crossing the threshold beyond which the majority of the global population can be said to be urbanised. Moreover, it glosses over the heterogeneity of forms considered under the category of 'urban'. From slums to world cities, urbanity is manifest in a multiplicity of spatial, political and economic forms. What is clear, however, is that the city and urbanity are, respectively, the predominant site and mode of existence in the twenty-first century. The advent of the urban millennium thus represents a transformation of epochal significance: a properly 'global' urbanisation.

If it has epochal significance, global urbanisation cannot be treated as a mere background, epiphenomenal fact. Like climate change, global urbanisation is giving rise to novel political assemblages (Sassen, 2006: 5): complex imbrications of subjectivity and materiality (Deleuze & Guattari, 1988: 503-

505). In other words, global urbanisation gives rise to distinctive modes of existence. In turn, such modes of existence demand the evolution of distinctive analytic categories. 'Global urbanisation' thus represents a transformation of both existence and the analytic frameworks through which that existence is interpreted and understood.

Experiences and discourses of (in)security represent one particular lens through which to observe these transformations. Urbanisation induces insecurities and vulnerabilities that range from criminal threats to person and property, through organised 'formations of (political) violence' (Feldman, 1991), to problems of access to utilities and/or shelter. In response discourses have emerged seeking to understand and respond to such insecurities, vulnerabilities and violence (e.g., humansecurity-cities.org, 2006). One might thus say that a reciprocal dynamic of urban securitisation is underway in which the security agenda is urbanised and urbanity is – insofar as it induces insecurity and vulnerability – securitised. One could refer to this reciprocal dynamic as the *urbanisation of security*.¹

Two interrelated questions are central to understanding this urbanisation of security. On the one hand both the multiple forms of insecurity and vulnerability that characterise life in contemporary cities and the discourses that seek to understand and respond to them raise the question of the way in which (in)security is being urbanised. That is to say, how are the experiences

¹ A phrase that captures both the urbanisation of the security agenda as well as the diffusion of (in)security and securitisations into and across the urban environment

and discourses of (in)security being distinctively inflected by the advent of global urbanisation? What is specifically *urban* about these experiences and discourses of (in)security? On the other hand, the concept of an urbanisation of security throws the spotlight of enquiry back onto the processes of global urbanisation posing the question of what is particular to such patterns of urbanity that they can induce these particular experiences and discourses of insecurity, vulnerability and violence. In other words, by noting a distinctively urban inflection of the experiences and discourses of (in)security we pose the correlative question of what is specific to the urbanity perceived to be responsible for their emergence. It should be stressed that these two questions comprise a reciprocal dynamic: changes in urbanity give rise to changes in the experiences and discourses of (in)security and vice versa. One should not, therefore, take one or other of these questions to have causal primacy.

Whilst violence and conflict are substantial themes in discussions of contemporary urbanisation e.g., UN-HABITAT, 2007), thinking about the manner in which the latter inflects global security is at an embryonic stage. This paper attempts to develop this nascent thinking through closer examination of the dynamics that characterise the urbanisation of security. The urbanisation of security is, however, a wide-ranging, complex phenomenon. In order to narrow the scope of enquiry, therefore, this paper will focus on a particular, distinctively urban type of organised violence, the insecurities it induces, the securitisations effected in response and the concomitant impact upon security discourses.

More specifically, this paper will focus on one aspect of the contemporary relationship between the city and warfare (cf. Graham, 2004a: 3-6; Graham, 2005), namely the relationship between the infrastructure purportedly at the heart of metropolitan life in an era of globalisation and two types of organised violence (or warfare): the 'effects based' warfare exemplified by the 'Shock and Awe' of the American invasion of Iraq in 2003 and the attacks on metropolitan systems associated with so-called 'al-Qaeda' terrorism exemplified in the 2001 destruction of the World Trade Centre in New York and the suicide bombing of the London transport system in 2005. It will be my contention that these instances of the nexus between the city and war illuminate the reciprocal dynamic of security and urbanisation simultaneously casting light on both the question of how urbanity is inflecting experiences and discourses of (in)security and the question of the nature of the urbanity that gives rise to the conditions under which such vulnerabilities and violences are realised.

The Urbanisation Of War and the Targeting of Critical Infrastructure

As Campbell, Graham & Monk (2004) note, the nexus between the city and war is of renewed significance in the era of global urbanisation. On the one hand the contemporary city has become both target of, and theatre for, distinctive forms of warfare that are shaping its spatial, political and economic forms (Coward, 2007). As a consequence cities are securitised in response to actual or imagined threats that are perceived to derive from such forms of war

and the distinctive way they exploit or endanger the urban fabric. On the other hand, war has increasingly become urbanised, insofar as its doctrine and practices are adapted to (or by) the demands of the urban environment as both theatre and/or target (Graham 2004; Rosenau, 1997). It should be noted, therefore, that this nexus is one in which a mutual constitution is underway: contemporary war is (re)constituted by urbanisation and the city is (re)constituted by contemporary warfare. As such then this nexus allows investigation of both the specifically urban inflection of organised violence (which is implied in a variety of insecurities) as well as the properties of global urbanity that are productive of (and influenced by) these contemporary, urban dynamics of warfare.

At the heart of the posited relationship between the city and warfare is the propensity for forms of organised violence to target critical infrastructure (CI). Generally speaking CI comprises the technical systems that underpin the ways of life specific to the contemporary metropolis (cf Graham & Marvin, 2001). Three technical systems are particularly prominent in CI discourses: those that underpin information and communication networks; those that both ensure mobility and perform logistical functions; and those that generate, store and deliver power (energy in various forms) and remove waste. More specifically these systems comprise the information technology, transport, food, water, power and waste systems that are 'the connective tissue' (Muschamp cited in Graham & Marvin, 2001: 43) essential to a functioning urban environment.

Whether it is doctrines that advocate the targeting of such systems, instances of actual organised violence against infrastructure, or discourses and practices of securitisation generated in response (or anticipation) to such doctrines and attacks, CI is a recurrent element in the contemporary relationship of organised violence and the city. Contemporary metropolitan life is perceived to comprise a complex imbrication of subjectivity and materiality, where the latter is constitutive of the historically specific form of the former. Violence against material infrastructure is thus a violence against, or rendering insecure of, the political subjects inhabiting the city. There are two principal forms such violence/insecurity takes, each with differing dynamics: warfare waged by advanced industrial states; and the terrorist strikes associated with so-called al-Qaeda or transnational terrorism. Each of these forms of violence, however, shares an implied logic of destruction focused on the disruption of CI. It is worth, therefore, examining each in turn before attempting to outline the specific logic of urban (in)security implicit in such violence.

Shock and Awe

The first form of violence against CI is best represented by the American assault on Baghdad in the opening phase of the 2003 invasion of Iraq. Referred, to as 'Shock and Awe' the bombing of the city began on March 20th 2003 but was particularly intense between March 21st and April 3rd (Human Rights Watch 2003: 18). During this period government ministries and elements of CI such as the telecommunications grid were specifically targeted

(Fisk, 2003:5; Jaulmes, 2003). The bombing campaign had significant impact on CI. For example on April 3rd/4th electrical power to the city was cut as a consequence of US military actions (New York Times, 2003; Shadid, 2003: A1). The damage to electrical grid was lasting, leaving those without access to generators without power even after the 'liberation' of the city (di Giovanni, 2003). Similarly, on 29th March a 'Cisco switch that connected Baghdad residents to the internet stopped responding' (McWilliams, 2003) thus severely interrupting the information technology and communications networks of the city. This campaign was intended to have a dual function. On the one hand, the targets attacked were selected as having high command and control and/or logistical value to the Iraqi regime. On the other, the symbolic effect of such bombing was designed to affect the morale of the Iraqis serving as a visible demonstration of the capabilities of the American war machine. As such targets were not only functional but also symbolic.

Shock and Awe represents both the culmination and evolution of the historical trajectory of military doctrine in advanced industrial states such as America. The roots of this doctrine can be seen in two interrelated strategies that emerged from the total war of 1939-45. On the one hand the roots of Shock and Awe lie in the strategic bombing employed in the early stages of World War II.² By targeting industrial facilities in European cities, strategic bombing

² I will here simplify strategic bombing into two phases: that in which industrial facilities were the ostensible target; and that in which enemy morale was targeted through the explicit bombing of civilian concentrations. I take it that the former tends toward the latter insofar as the targeting of industry gives rise to the idea that enemy civilians (e.g., factory workers) are as responsible for their war effort as their military forces and, hence, are a legitimate target. Such an idea legitimates the destruction of civilians resulting in the second phase – epitomised by the destruction of Hamburg and Dresden – in which civilians are attacked as a target in their own right (i.e., not simply as elements of the war machine). See Shaw (2003: 126-7).

initially sought to disrupt lines of production, logistics and communication. Whilst the disruption of lines of supply, communication and intelligence has always been a primary objective of warfare, the bombing of 'industrial targeting sets' (Ullman & Wade, 1996: 33) represents the evolution of a form of total war in which objects that are staffed by, and often central to the continued existence of, civilians are taken to be legitimate targets of war. In such warfare entire societies are mobilised to support military operations and thus, it is reasoned, society in its entirety – including the industrial and transport infrastructure that assures its continued functioning – comprises a target (Shaw, 2003: 24-5; Markusen & Kopf, 1995: 151-82). On the other hand the roots of Shock and Awe lie in the firebombing of German and Japanese cities and, ultimately the detonation of atomic bombs over Hiroshima and Nagasaki. These attacks could be interpreted as rudimentary 'effects based operations' (Smith, 2002; Ho, 2005) intended to stun and demoralise an enemy (conceived of as an enemy population in its entirety) into conceding victory.

In the book regarded as seminal in the formation of the doctrine of Shock and Awe, Ullman and Wade note that the first task in 'achieving rapid dominance' is attacking the command and control, supply/logistics and transport system of the enemy's political-military machine (Ullman & Wade, 1996: 13). The enhanced accuracy of contemporary military technology helps to achieve superiority in accomplishing such a task. However, Shock and Awe is extended to a wider set of targets including public buildings and infrastructures. This extension is justified as a means to achieve an effects-

based impact on the population to stun and demoralise them and thus enable 'rapid dominance' by American forces.

Shock and Awe thus represents both a continuation and evolution of the trajectories established under conditions of total war. On the one hand it represents a continuation of the perception that targets essential to the functioning of civilian life as well as those central to military operations can be regarded as legitimate targets. In other words it represents a continuation of the doctrine that disrupting enemy life through destroying infrastructure is a legitimate goal of modern warfare. On the other hand Shock and Awe represents a continuation of the logic of massive bombardment, perceiving one of the core rationales for disrupting the infrastructure central to metropolitan life to lie in the potential such destruction has for demoralising the enemy and hastening a declaration of defeat.

However, Shock and Awe also represents a radicalisation of the trajectory of western warfare through the deployment of accurate munitions to achieve direct targeting of a select set of infrastructure objectives. This selective targeting is a product of the confluence a number of technological, doctrinal and socio-legal trends. More specifically, it is a consequence of the refinement of the accuracy of guided munitions, the emergence of doctrines of 'network centric' and 'effects based' warfare, and the exposure of military operations to legal and ethical discourses (Shaw, 2005; Smith, 2002). These trends both restrict the targets that might be deemed legitimate in military action as well as encourage the development of increasingly accurate

munitions to attack those targets without causing 'collateral' damage. In one sense this means a decrease in massive bombardment, and yet in another it means greater destructive potential as targeting becomes more efficient through precision. If the aim is no longer to carpet bomb the city, it is rather, as Graham notes, to 'switch the city off' (Graham, 2005). Such a 'switching off' is an effects based strategy designed not only to disrupt the enemy political-military machine (by disrupting supply, logistics, intelligence and so on) but also to demonstrate to the wider population the consequences of continued resistance. Shock and Awe thus seeks 'rapid dominance' through a carefully targeted, but nonetheless devastating, assault on the technical structures that ensure the continued functioning of metropolitan life.

Stephen Graham (2005: 181-5) notes that the assault on Baghdad has important precursors in the degradation of Iraqi infrastructure during the sanctions and sporadic bombing that followed the 1991 Gulf War as well as the attacks on targets such as electricity stations and bridges that were central to the air campaign over Kosovo in 1999 (see also Coward, 2008: 19-24). While the sanctions regime did not target infrastructure *per se*, it prevented the reconstruction, repair or maintenance of a number of infrastructural sites on the basis that they comprised 'dual use' facilities of potential importance to the Iraqi military. As a significant amount of Iraqi infrastructure had been destroyed during the 1991 gulf war, such an embargo ensured the further degradation of technical structures. Such an embargo is consistent with the notion that infrastructure represents a legitimate target due

to both its value to the political-military machine and its importance to the way of life of enemy populations.

The Kosovo campaign amplified such a logic actively selecting civilian infrastructure as a target, destroying electricity stations, bridges and oil refineries as well as symbolic buildings central to the Serbia's political-military efforts. Such targets were selected both as a means to degrade the operating capacity of the Serbian Police and military as well as to achieve effects aimed at the wider Serbian population. Leaving Belgrade in the dark thus served both the purpose of disrupting the Serbian political-military operations as well as indicating to the wider Serbian population that they were being held responsible for the actions of their leaders (and thus, presumably that they could play a role in the resolution of the crisis). This targeting of Belgrade and other Serbian cities was not just a destruction of military and political command, control and supply lines, it was also a deliberate degradation of the technologies essential to urban life in order to demonstrate the vulnerabilities of such life to NATO military dominance.

From 9/11 to 7/7: Transnational Terrorism and Critical Infrastructure

The second example of the deliberate targeting of metropolitan infrastructure is that of the attacks on the cities of New York and London attributed to so-called 'al-Qaeda' or 'transnational' terrorism. Discussion of these attacks in the academic literature has tended to focus on the causes of, and response

to, such attacks. As this paper is concerned with the destruction effected by each attack it is worth briefly restating the events on which I want to focus.

As is well-known, the New York attacks on September 11th 2001 deployed hijacked airliners against the World Trade Centre (WTC). The impact, explosion of jet-fuel, and subsequent fires created by flying airliners into the twin towers of the WTC resulted in massive loss of life (2750 as of December 2007 (Bureau of Vital Statistics, 2007: 75)), destruction of buildings and disruption of the technical systems clustered in that area of Manhattan. Both of the twin towers collapsed in addition to another building in the WTC complex (WTC 7) while a number of buildings beneath, or adjacent to, the WTC were damaged. A total of '30 million square feet of commercial office space' (Bram, Orr & Rapaport, 2002: 7) was destroyed with reports indicating rebuilding and repair costs of \$11.2 billion. Estimates immediately following the attacks indicated that '11 percent of Manhattan Class A [office] space and 44 percent of Downtown Class A [office] space' (Hevesi, 2001: 5) had been destroyed – equivalent to the destruction of the 'entire office-space inventory of Atlanta or Miami' (Hevesi, 2001: 4).

The loss of these buildings does not, however, simply represent the loss of empty space or simple walls, floors and ceilings. The loss of office space also represents the loss of dense infrastructures of information technology. The cost of 'replacing the contents of the destroyed buildings, including the technology and fixtures, has been estimated to be \$5.2 billion' (Bram, Orr & Rapaport, 2002: 7). In addition to the loss of this commercial serviced space

two subway lines and a Port Authority station were damaged and parts of the telecommunications and electricity network were destroyed. Estimates indicate the costs of repair (including the repair of 200,000 damaged phone lines and 5 telecoms switching stations as well as the replacement of 2 electricity substations and 33 miles of power cable (Hevesi, 2001: 6)) to be \$3.7 billion (Bram, Orr & Rapaport, 2002: 11).

The London bombings wrought destruction on a smaller scale directed at a specific form of CI. The attacks targeted the rail transport infrastructure at a busy period of the day. On 7th July in London, suicide bombings on three trains and a bus killed 52. The attacks closed stations and damaged power and signalling cables. Part of the Circle line and affected stations were closed as a consequence, disrupting the functioning of the underground for several weeks.³ There was an immediate, though temporary, impact on the number of commuters using the underground, and the London Chamber of commerce noticed a downturn in economic activity (London Chamber of Commerce and Industry, 2005: 14). These impacts demonstrate the centrality of transport infrastructure to metropolitan life.

It is not possible to claim that CI was the only target of these attacks. Indeed, both attacks (and others like them) have both symbolic (cf. Closs Stephens, 2007) and instrumental/pragmatic dimensions (cf. Jordan, 2008) not discussed in this paper. On the one hand the attacks are targeted at buildings, institutions and sites that have significant symbolic value as icons of particular

³ For example, Aldgate station reopened on 25th July (Metronet, 2005a) while Edgware Road reopened on 29th July (Metronet, 2005b).

socio-cultural values. On the other attacking these buildings and transport infrastructure is calculated to maximise casualties (insofar as both represent enclosed spaces in which the effects of a detonation will be amplified) whilst also having ongoing effects in terms of the fear created and a concomitant reduction in travel (and thus economic activity). That said, these dimensions of terrorist activity remain inseparable from the targeting of CI. That is to say, symbolic and instrumental logics of destruction are only achieved through targeting CI. It is CI that expresses symbolic value (for example the iconic status of the London bus) and provides the material conditions that underpin the instrumental calculation of how to achieve maximum casualty rates and impact (for example, by enclosing numbers of workers/commuters or networking key nodes in communication). CI is thus not a simple backdrop for other logics of destruction, it is integral to them. Perhaps this is why it has been attacked so many times in the history of terrorist activity.⁴

Continuities in the targeting of Critical Infrastructure

It is, of course, not possible to reduce these two instances of violence to one another. Indeed, despite vigorous debates about the legitimacy of both forms of violence, Shock and Awe is a state sanctioned practice requiring the mobilisation of vast resources while terrorist bombings remain a form of asymmetric warfare staged by small cells with resources that are limited by comparison. It is important to note, however, that, insofar as they share the

⁴ For example a United States Government Audit Office report notes that 'one-third of terrorist attacks worldwide target transportation systems' and 'surface transportation systems were the target of more than 195 terrorist attacks from 1997 through 2000' (United States General Accounting Office, 2003: 1 & 7, respectively).

targeting of CI, both Shock and Awe and so-called 'al-Qaeda' terrorism expose a deeper logic at work in the urbanisation of warfare and associated experiences and discourses of (in)security. Directing their violence against CI represents the adaptation by each form of violence to urbanity as both theatre and target of contemporary war, violence and (in)security. Understanding this deeper logic implicit in the targeting of CI will thus expose precisely what is distinctive about the *urbanisation* of security and thus, by implication, what is characteristic of global urbanisation in the contemporary era. This deeper logic is two-fold and entails both the emergence of the network as a primary motif in experiences of discourses of specifically urban (in)security and the transformation of the extent and character of legitimate battlespace. I will treat each of these in turn.

The targeting of CI conforms to the basic tenets of the doctrine of 'network-centric' war (Alberts, Garstka & Stein, 2000). 'Network-centric' warfare was conceived in the post-Cold War period as an element of the so-called Revolution in Military Affairs (RMA). It refers to a doctrine based on domination of the information spectrum supported by the use of precision munitions, mobile forces and accurate real-time modelling of enemy forces and infrastructures. As a doctrine it aims, like Shock and Awe, to decapitate and disrupt an enemy force through the application of precise but overwhelming force at key points in the structures of opposing forces. Such a doctrine is 'effects based' insofar as it aims to achieve victory not through the attrition of large numbers of enemy forces (though this can happen, as in the

1991 Gulf War), but through a demonstration of a superior ability to cripple the structures that keep those forces operational.

Despite an association with 'risk transfer militarism' (Shaw, 2005), the idiom of network centrality resonates with the contemporary trends of global urbanisation. Global urbanisation is, as UN-HABITAT (2004: 49-75) has noted a process of metropolitanisation in which existing urban centres are expanding by virtue of the technical structures that make meaningful interconnection over longer distances possible. These infrastructures give rise to the phenomenon of falling density in cities even while the populations of the same cities rise (UNFPA, 2007: 47). Such a phenomenon, previously referred to as sprawl or suburbanisation, is referred to by the UNFPA as 'peri-urbanisation' (2007: 48). Peri-urbanisation leads to the emergence of 'metacities' – massive, multi-centric urban conglomerations in which the fringes of a number of cities meet to create a greater urbanised area (UN-HABITAT, 2006: viii).

The infrastructures responsible for such a trends are networked: road systems, information technology and communication systems, retail/food supply logistical chains, water and power systems and waste removal systems. Of course one cannot say that such infrastructures are universally, or evenly distributed across global urbanisation. However, even those infrastructurally poor zones of urbanisation – slums, for example – are defined in relation to networked CI (UN-HABITAT, 2006: 19; Davis, 2006). Such informal urbanisation is precisely defined by the expectation that both the

existing state of deprivation and a possibility of positive future development rest on the extension (or lack thereof) of CI systems.⁵

Concomitant to the emergence of infrastructure as a defining element of global urbanisation is the perception that networking is the social, economic, and political characteristic proper to contemporary urbanity. The globalisation of the economy and transportation as well as the virtualisation of knowledge and communications has led to an unprecedented perception of contemporary urban existence as a form of 'network society' (Castells, 2000). Such a trend has led to the emergence of trans-local communities and the perception that all identities are exposed to, and thus constituted by, relations with wider communities through transnational networks of supply, exchange, mobility and communication. The notion that global urbanisation is characterised by the motif of the network (which is defined by relationality and connectivity) is underpinned by CI. Thus through the targeting of CI both Shock and Awe and 'al-Qaeda' terrorism have become urbanised: targeting both the underpinning material technical structures that have generated global urbanisation as well as the predominant way of life, or urbanity, characteristic of the contemporary era. It is precisely the network as both material substrate of urbanisation and motif of urbanity that both western warfare and transnational terrorism have converged upon. It is this that makes both *urbanised* forms of war.

⁵ It is important to note that lack of CI is the best, and only clearly acknowledged, definition of what comprises a slum. Lack of security is a secondary defining characteristic that follows from, but is not equal to, lack of CI. See: UNHABITAT (2006)

However, there is a second characteristic of this urbanisation of war (and associated experiences and discourses of (in)security): a transformation of conceptions of battlespace that mirrors the expansive character of global urbanisation and has important consequences of urban (in)security more broadly. The city has had a long relationship with war and the various associated discourses of security. Besieged and often sacked in the medieval period, war was instrumental in the early spatial formation of the city (Ashworth, 1991). Later in the modern period the widening and straightening of boulevards to accommodate the desire to station and manoeuvre troops within the city, the need to rebuild after the aerial and/or ground bombardment of strategic centres of industry, or the sprawl that resulted from attempts to mitigate the effect of nuclear war have all shaped the spatial form of the city (cf. Graham, 2004b). Likewise, terrorists have played a role in the emergence of hardened architecture, 'rings of steel' and surveillance technologies (Coaffee, 2003).

The legitimacy of targeting the city has been ambivalent. On the one hand the city has been seen as a primarily civilian zone in which violence must either be eschewed or deployed with extreme care, on the other the city has been seen as a legitimate target housing key nodes in the infrastructures that support war and a population that is either complicit in, or key to the cessation of, war. This ambivalence can be seen in the way that both state militaries and terrorists have repeatedly returned to target the city whilst simultaneously delimiting their attacks with complex rules of engagement. We can see this ambivalence in the notion of 'dual use' infrastructure and the test of

proportionality applied when targeting it. Such infrastructure is tacitly acknowledged as civilian and yet seen as a legitimate target insofar as it is also acknowledged to have strategic value. The city's CI is thus exposed to an ambivalent calculus in which its vital technical systems can be destroyed (and civilian life thus affected) if doing so can be said to advance the achievement of a strategic goal. The city is thus acknowledged to be simultaneously both legitimate and illegitimate target.

The networked urbanised war epitomised by Shock and Awe and 'al-Qaeda' terrorism has no such scope for ambivalence. If the networks that characterise both cities and urbanity in the contemporary period are the targets of specifically urbanised forms of organised violence, then the city and urbanity are conceived of as legitimate arenas and targets of violence and thus exposed to attendant vulnerabilities and insecurities. We might say that this re-conceptualisation of the arenas and targets of violence corresponds to a transformation of the conception of battlespace from one in which forces meet each other at a notional frontline, to one in which destructive force is applied at nodes (cf. Latham, 1999: 213). Such a transformation is posited as a move from notions of organised violence that are oriented towards controlling territory and massing force behind a rolling line of engagement to one where territoriality is less important and force is not massed but directed at key nodes in a network. This transformation from a spatial metaphor based on planar movement to one based on application of force to points (cf. Graham, 2003; Weizman, 2002) is posited as being responsible for the widening of battlespace and the exposure of increasing numbers of civilians to

the insecurities such organised violence entails. Where military action is guided by the idea of movement across a plane, areas on that planar surface may be proscribed. Where force is applied to nodes, no such proscription applies: any node becomes a target regardless of its relation to the wider urban/rural location.

That the image of the world as a series of interconnected points corresponds with the urbanity of the networked society should be clear. Violence against CI is thus 'urban' insofar as it shares a discursive trope with contemporary urbanity, a trope in which existence is represented as interconnected nodes rather than as planar territories. In such a discursive representation there is a lack of the proscriptions that territorial tropes entail. That is, each and every node could be a target while the entirety of the network is an arena of violence, whereas more territorially organised tropes can proscribe islands of civilian life such as cities. Networked urbanity is thus radically exposed to violence, vulnerability and (in)security. As a response discourses and practices of securitisation suffuse the networked lineaments of the city in the era of global urbanisation and are manifest in the hardening of its nodes and surveillance of the interconnections. CI, and the networked trope through which it is discursively conceived, thus reveals the distinctive urbanisation of violence and (in)security in the era of global urbanisation.

The network – embodied in the dual form of the technical systems of CI and the discursive tropes that define contemporary urbanity – thus represents that which inflects warfare (and attendant experiences and discourses of

(in)security) in a distinctively urban manner. We can refer to violence and (in)security as *urbanised* insofar as they are organised around, and understood through, the network either as technical system of CI or discursive motif. Noting the nature of the inflection that gives rise to specifically urbanised violence and (in)security represents only part of the dynamic of the urbanisation of security, however. As I noted at the beginning of the paper, the urbanisation of security does not just tell us something about the urban inflection of security in the contemporary era. It also tells us something about the nature of urbanity in the contemporary era. I have already indicated that this urbanity is constituted in and through the trope of networked interconnection, but this does not tell us about the way of life characteristic of a network exemplified and underpinned by the technical systems of CI. It is to this question that I will turn in the next section of this paper prior to drawing some conclusions about the urbanisation of (in)security.

Understanding Contemporary, Networked Urbanity

It is thus possible to argue that targeting CI provides a lens for understanding the urbanisation of security. Violence, vulnerability and (in)security can be said to be *urbanised* insofar as they are organised around the technical systems and discursive tropes of networked infrastructure. That is to say, insofar as this violence, vulnerability and (in)security pertains to the targeting of networks either in the sense of the physical lineaments of the infrastructural underpinnings of contemporary urban form or in terms of the sense of interconnection and relationality that is constitutive of urbanity in an era of

global urbanisation. As such urbanised violence exploits and develops the potential of the linkages that characterises contemporary urbanity from the mobile phone to transport infrastructure. However, the urbanisation of security is not simply a matter of the selection of a specifically urban target. Such attacks provoke (and ultimately respond to) the pre-emptive securitisation of urban networks epitomised by hardening of buildings and surveillance and control of mobility.

Noting the characteristic that might be said to give violence, vulnerability and (in)security a specifically urban inflection is, however, only part of the story. The cycle of violence and securitisation that revolves around the network (both as technical infrastructure and constitutive discursive trope) does not simply reveal how practices of violence and security are being urbanised. It also sheds light on the wider nature of the urbanity that is inflecting practices of violence and security. That which inflects violence and (in)security in a distinctively urban manner is a core constituent of urbanity itself in the contemporary era. It is that which characterises urbanity in general in the contemporary period which then inflects the narrower phenomena of violence and (in)security in a specifically urban manner. If we can identify the latter inflection, we can extrapolate about the wider urbanity that has given rise to the narrower urbanisation of security. It should be noted that this is not a causal relationship – global urbanity does not cause urbanisation of security – but it is a relationship in which the core characteristics of urbanity and the specifically urban inflection of practices of violence and security mutually constitute each other.

Insofar as it is the *network* – both as technical infrastructure and discursive trope – that is the specially *urban* characteristic of the urbanisation of security, we should investigate what the centrality of such a trope tells us about urbanity in an era of global urbanisation. Although the network has multiple dimensions in contemporary urbanity, I want to focus on two in particular: the effects that the underpinning of urbanity by technical infrastructures has on both the spatial form of the contemporary city and the complex ecology of subjectivity characteristic of global urbanisation.

Networking And The Spatial Form Of Metropolitanisation

The network underpins the spatial forms that are distinctive of the metropolitanisation which characterises global urbanisation. Two trends are worth identifying. On the one hand, metropolitanisation is characterised by a sprawl directly linked to networked infrastructure. As I have noted, the UN refer to this sprawl as peri-urbanisation (UNFPA, 2007: 48). As such it should be distinguished from the suburbanisation that has characterised development of cities in advanced industrial countries. Suburbanisation represented the hollowing out of cities and was underpinned both by Cold War city urban planning (Dudley, 2001) and what might be loosely referred to as class dynamics (specifically the movement of middle classes to the fringes of the city in search of a better quality of life). While peri-urbanisation results in a similar reduction of urban density to suburbanisation, it's dynamics are more complex. Where suburbanisation represented the hollowing of cities,

peri-urbanisation represents the emergence of polycentric metacities (Anas, Arnott & Small, 1998:1439-1444; UN-HABITAT 2004, 2006): giant urban conglomerations which represent the merging of previously distinct urban regions into single giant urban complexes. While suburbanisation thus represents a de-centring of the city, peri-urbanisation represents a re-centring, albeit a re-centring that results in polycentric urban regions.

Peri-urbanisation and metacities are a consequence of the nodal structure emerging from the infrastructures and tropes of the network. Network infrastructures make spatial dispersion possible and thus lead to declining density as remote working and social networks supplant commuting and face-to-face contact. However, networks do not lead to simple dispersion, but rather entail the formation of a number of new nodal points at which interconnection occurs. While the suburb simply decentres the city, the peri-urban network creates a number of nodes at which interconnection is realised. This is a product of the interconnective structure of the technology and trope of the network.

Networks are not, however, without their socially divisive qualities. As Graham and Marvin (2001) have noted, the interconnection of the network occurs simultaneously with a 'splintering' dynamic. While the network may give rise to new nodes of interconnectivity, it also acts as a new form of exclusion. The metropolis faces three splintering dynamics. Firstly, it faces the challenge of providing networked infrastructures on a widespread basis. As UNHABITAT note one of the most obvious characteristics of emerging metropolises is their

infrastructural poverty. Lagos, for example faces 'the logistical nightmare of clearing over 10,000 tonnes of refuse generated daily in an urban area that enjoys only 40 per cent sanitation...[e]ndless traffic snarls...[and] a 40 per cent access rate to potable water' (UN-HABITAT, 2004: 56). Infrastructures are thus splintering insofar as those left without their connective technologies and dynamics clearly suffer from a vastly reduced quality of life.

Secondly, infrastructures may be connective, but are simultaneously exclusionary insofar as their connection of points enables the bypassing of entire regions and populations. The connective technologies of CI can thus arrange point-to-point interconnections that connect across vast distances and yet at the same time pass over entire areas and populations. As CI is securitised access to such connective infrastructures is further restricted, thus introducing an exclusionary dynamic as the flipside of the re-centring, connective dynamic of the network (Graham & Marvin, 2001: 170-1; Moss, 2008: 445). Finally, as Graham and Marvin (2001: 100) note the CI that underpins such networks is increasing unbundled and privatised. Whereas the metropolitanisation of the west was largely accomplished through the provision of publicly owned CI, networks of communication, transport, logistics, nutrition and waste removal are increasingly separated from one another and privatised. This introduces a second dynamic of exclusion to metropolitanisation. It is not simply that spaces and populations can be passed over by interconnective networks, but that even where access is possible it is frequently priced in a way that is exclusionary. Metropolitanisation thus has a interconnected, sprawling, splintered spatial

form that is a direct consequence of the centrality of networked infrastructure to its development. It is this spatial form that is the characteristic dynamic of global urbanisation.

The Complex Ecology Of The Metropolitan Political Subject

The constitutive role of networked infrastructure in global urbanisation gives rise to a second important characteristic: namely a complex ecology of political subjectivity that can be referred to as 'metropolitan life'. CI is more than an enabler for the urbanity that characterises contemporary metropolitanisation. Network infrastructures are constitutive of distinctive forms of subjectivity (cf. Bennett, 2004, 2005). Thus the subjectivity of metropolitan urbanites is inextricable from the infrastructures that ensure their communications, transport, logistics, provision of food and power as well as removal of waste. We should not see such technologies as simply a backdrop without which quality of life would be diminished. Rather these technologies are constitutive of novel forms (or, since they comprise a complex and holistic interaction of material and human elements, ecologies) of subjectivity. The driver of the car, for instance should not be regarded as separate to their transport. Rather car-driver-road-satnav constitutes a novel ecology of subjectivity. Similarly, the metropolitan life constituted by the distribution of water, power, and access to information conduits is an entirely different form of subjectivity to that constituted in the infrastructure 'cold spots' (Moss, 2008) of the world's slums (though the forms of subjectivity constituted by the latter

might aspire to the complex ecology of subjectivity found in infrastructure rich metropolitan life).

Both Tim Luke and Stephen Graham have referred to the ecology of subjectivity characteristic of metropolitan life as 'cyborg' (Graham 2005: 170-2). For both Graham and Luke, 'cyborg urbanisation' is intended to capture the manner in which, as urban life is increasingly constituted through technological networks, the boundary of the human and the machine becomes blurred. That is to say, as urban forms of life are increasingly constituted by technical systems, it is harder to separate the human and the technological since both are part of holistic ensembles which lose their meaning and function if disaggregated. This description captures the nature of metropolitan life well, a complex subjectivity composed of an holistic ensemble of material and human elements that have a singular meaning which cannot be disaggregated. To see the technological as a simple tool or mere backdrop, fails to grasp the manner in which it is an integral part of the subjectivities constituted in and by metropolitan life. While I would prefer the trope of a network constituting a complex ecology of subjectivity (insofar as it captures better the spatially dispersed, CI based, form of life characteristic of global urbanisation) to that of the cyborg, the latter captures the sense of a holistic ensemble of material and human factors in the constitution of metropolitan life.

It is this complex ecology of subjectivity that is at stake in the urbanisation of security. It is a form of subjectivity with novel vulnerabilities that will be central

to the evolving agenda of security studies. Those vulnerabilities are in part a function of the technological systems that are a constitutive element of such subjectivity. This is part of the reason why the securitisation of infrastructure has played such a prominent role in the ongoing urbanisation of security. The hardening and protection of such infrastructure represents an obvious securitisation of the material elements of such subjectivity. However, such securitisation will not eliminate the violences, insecurities and vulnerabilities experienced by metropolitan subjectivities. Securitisation may protect material technologies, but it also disrupts the networked interconnectivity that is also central to metropolitan life. The complex subjectivity of metropolitan life is thus not simply the imbrications of material and human, it is also the interconnectivity that such a process gives rise to. The securitisation that is reciprocal to the vulnerability of CI cannot thus fully mitigate the vulnerabilities of metropolitan life. It can protect the material substrate of that life, but not the networked interconnectivity that is its proper characteristic. Moreover, the threats to such subjectivity come not from war alone, but also from the splintering morphology of global urbanisation. Metropolitan life is not only vulnerable to the destruction of its material infrastructure, but also to loss of access to its circuits.

Coda: metropolitan life, circulation and bio-politics

By way of conclusion I want to outline – in schematic form – some thoughts on the bio-politics of the forms and vulnerabilities of metropolitan life outlined above.

Firstly, it should be noted that although discourses of network centrality emphasise the nodal points at which interconnection occurs, networked life is one of circulation. Though attacks on CI concentrate violence towards the locations at which interconnectivity can be disrupted, the focus of the violence is to interrupt the flow implicit *between* such points. Secondly, it should also be noted that this is a violence predicated on mobility: it is, as American strategists have noted, distinctively *kinetic*. It is a fluid, pulsing violence that, insofar as it is itself networked, consists of a number of flows from one nodal point to another. It is a form of violence predicated on the drawing together of flows of information, finance and transport in order to deliver force with agility. In this sense it is different from the defensive inertia that characterised the massing of troops along borders, or the 'dumb' rolling of massed force along a frontline which was essentially characterised by a failure to properly master the flows of information and logistics that necessitated the overwhelming (and ultimately indiscriminate) application of violence.

Thirdly, though the complex ecology of subjectivity that characterises metropolitan life stresses combinations of material and human, such combinations are distinctive insofar as they facilitate mobility. Such mobility is not the simple movement of the body from one place to another (epitomised by the worker travelling from home to the office), but rather take the form of remote interconnections which virtualise the body and provide for 'presence' at distance. Such virtualisation creates flows of information, wealth and labour that are more complex and productive than the simple transport of bodies

indicates. The destruction of power cables, telephone lines, office space and so on disrupts such virtualisation and the subjects that it constitutes.

Mobility is thus at the centre of contemporary global urbanisation and metropolitan life as well as the violences that are distinctive to the former and target the latter. As such, Foucault's account of the regulation of circulation advanced as part of his account of the emergence of biopolitical security regimes, might seem an obvious touchstone for understanding the responses to attacks on the CI at the heart of metropolitan life. Indeed, Foucault's account of the way in which the regulation of urban morphology to establish, maintain, regulate and secure various flows and interconnections is instructive when it comes to thinking about the securitisation of the contemporary global metropolitan network.

That said, I think there is a major problem in thinking with Foucault about the securitisation of metropolitan life: namely the *bios* of the bio-political. In Foucault's account bio-politics refers to the constitution and regulation of the biological characteristics of populations. For Foucault bio-politics is the securitisation of the 'natural' basis of the human subject (conceived as an element in a population). Of course, the picture he develops is complex – what the 'natural' functions of the population are should be understood to be socially constructed. However, biopolitics remains a question of the securitisation of the vital (productive) functions of the human organism.

Metropolitan life, however, is not fully human: it is cyborg. We could, of course, treat cyborgs by analogy with entirely organic organisms and simply treat their 'machine parts' as instrumentally subordinate to the functions of the human 'subject' they are appended to. In this way we might treat the car as a simple tool for moving, or the pen as a tool for writing. But it strikes me that this is too crude. Indeed, it fails to really take account of the complex ecology of subjectivity that metropolitan life implies – an ecology in which things have agency (as Bennet notes) and thus in which the securitisation of the vital powers of the population is not simply a matter of securing humans and their tools.

As such then, I think that the attacks on CI detailed here and the metropolitan life they reveal ask questions about the *bios* of biopolitics. It seems that it is not simply circulations that produce and sustain productive populations that are at stake in the (in)securities detailed above, but more the complex ecologies of subjectivity that networked global urbanisation generates. As such, then, I think we will need to consider whether the eco-politics of metropolitan life can be adequately grasped by the bio-politics of the extant Foucauldian account.

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