DIOHAS

Designers' Initiative Of Health And Safety

Meeting Record

Date	12 March 2019 (Tue)
Venue	AHMM, Morelands, 5-23 Old Street, EC1V 9HL
Chair	Paul Bussey
Author	Goh Ong

Attendees	**Name**	**Initial**	**Company**
	Jonathan Banasik (guest speaker)	JB	
	Gary Burden (guest speaker)	GB	PRP Architects
	Nima Shamsipour	NS	Rund
	George Poppe	GP	Sheppard Robson
	Steve Coppin	SC	Arcadis
	Roland Reinardy	RR	Hawkins Brown
	Peter Hegarty	PH	Chapman Taylor
	Santiago Moreno Jiménez	SMJ	
	Goh Ong	GO	AHMM
	Dominika Kubieniec	DK	AHMM

Guest Speaker 1 Jonathan Banasik

Guest Speaker 2 Gary Burden, PRP Architects

Speaker's Biography

- **Jonathan Banasik**, who is completing a BSc in Architecture at the Welsh School of Architecture (Cardiff University). Jonathan will present his research in paranoid architecture in the public realm and discussing the usefulness of methodologies conceived by Forensic Architecture to various demographics, such as how their practice reconfigures and analyses data into CT threat analysis and strategy;

- **Gary Burden** of PRP Architects, who is also a DIOHAS regular, will show experiences of designing for CT. At a macro level he will examine the collaborative design responses to CT analysis and security services.

Jonathan Banasik

Paranoid Architecture and Managing Risk in the Public Realm Through Analysis of the 7/7 London Terrorist Attacks

Abstract
This paper aims to analyse the architectural devices used to police, manage and minimise risk of attack in the public realm. To achieve this, I will be looking specifically at the London Underground Network and using the 7/7 terrorist attacks as a case study. The following piece will aim to demonstrate that very little physical architecture can and has been implemented (Fig. 1.), to most effectively reduce the terror threat in public realm and circulation spaces. But it is, rather, the devices of architecture that subliminally deter potential crime, which most powerfully impacts on a person's mentality[1], in these spaces. Through the lens of Forensic Architecture and a select number of their conceived methodologies, I will be analysing the 7/7 terrorist attacks as well as the effectiveness of the methodologies themselves. The strategies for reducing risk will be evaluated on their effectiveness and impact on the current circulation. Through this essay you will see how London manages an equilibrium between the smooth running circulation of population and the monitoring and filtering of the same people for potential threats.

Introduction
This paper aims to analyse the architectural devices used to police and minimise risk of attack in the public realm. To achieve this, I have looked specifically at the London Underground network, through the lens of Forensic Architecture, using the 7/7 terrorist attacks as a case study. London's arteries are its Underground Tube network, which provides critical circulation and access. It is a vital piece of public infrastructure to the working success of the city. When an artery bursts, or is infected, the system can go into shock. This attack has led to my analysis of a paranoid culture of risk within the public realm in the 21st century. The essay investigates what happens when you try to police architecture inherently designed to allow fast population circulation, and how this paranoia of risk is fed through architecture. It will also demonstrate that very little physical architecture can and has been implemented (Fig. 1.), to most effectively reduce the terror threat in the public realm and circulation spaces. It is instead the devices of architecture that impact a person's mentality[2] which are most powerful. (Fig. 2.) The fourth attack on 7th July clearly deviated from the plan as it detonated in front of the British Medical Association, which allowed expertise and aid to reach the victims far more quickly[3], reducing the fatality figures and its immediate effectiveness. Although, in a wider context it acted as an effective terror strategy, as injured victims from the other sites had been transported on buses to hospitals for the hour before this detonation[4]. Consequently, all bus routes and public transport infrastructure, in and around London, were grounded for the rest of the day. So to that extent, the 'atmosfear'[5] was achieved. I will, however, be focussing on the first three bombs and the architectural thinking involved with the London Underground.

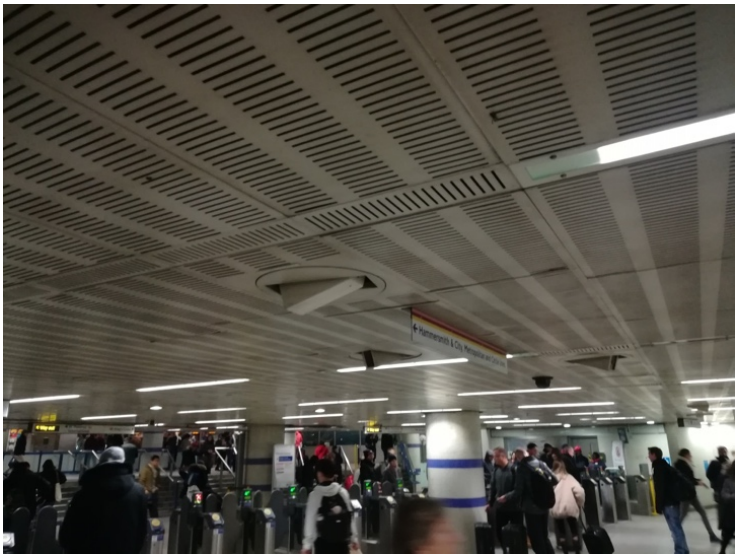

Fig 1. King's Cross St. Pancras Underground Station ticket hall.[6]

[1]Greig Crysler, Hilde Heynen, *The SAGE handbook of Architectural Theory,* (England: SAGE Publications Ltd, 2008), pp. 259
[2]Greig Crysler, Hilde Heynen, 2008
[3]Lucy Rodgers, Salim Qurashi, Steven Connor, *7 July London Bombings: What Happened That Day?* (London: BBC, 2015) <https://www.bbc.co.uk/news/uk-33253598> [accessed 20/12/18]
[4]Eric, K. Stern, and others, 'Post mortem crisis analysis: dissecting the London bombings of July 2005', *Journal of Organizational Effectiveness: People and Performance,* (Emerald Group Publishing Limited), Vol. 1 No. 4, 2014, pp.411
[5]Crysler writes of 'atmosfear' serving as a pedagogical device that produces fear, legitimates authoritarian state power, and mobilizes a political economy of disaster. Greig Crysler, Hilde Heynen, *The SAGE handbook of Architectural Theory,* (England: SAGE Publications Ltd, 2008), pp. 259
[6] Fig. 1. Own Image, 2018, King's Cross St. Pancras Underground Station ticket hall.

Figure 1 provides a great insight into the surveillance strategies in place. The retrofitting of CCTV and positioning of guards along the edges of the space, work together effectively. The CCTV is designed in line with Jeremy Bentham's principle of Panopticism and the totalitarian ideal: of being able to watch everything simultaneously, whilst no one is able to watch you[7], is used extensively across the network. Because there is such a need for the speed and fluidity of circulation in these spaces, security is restricted to an observatory role, deliberately hidden or showcased.

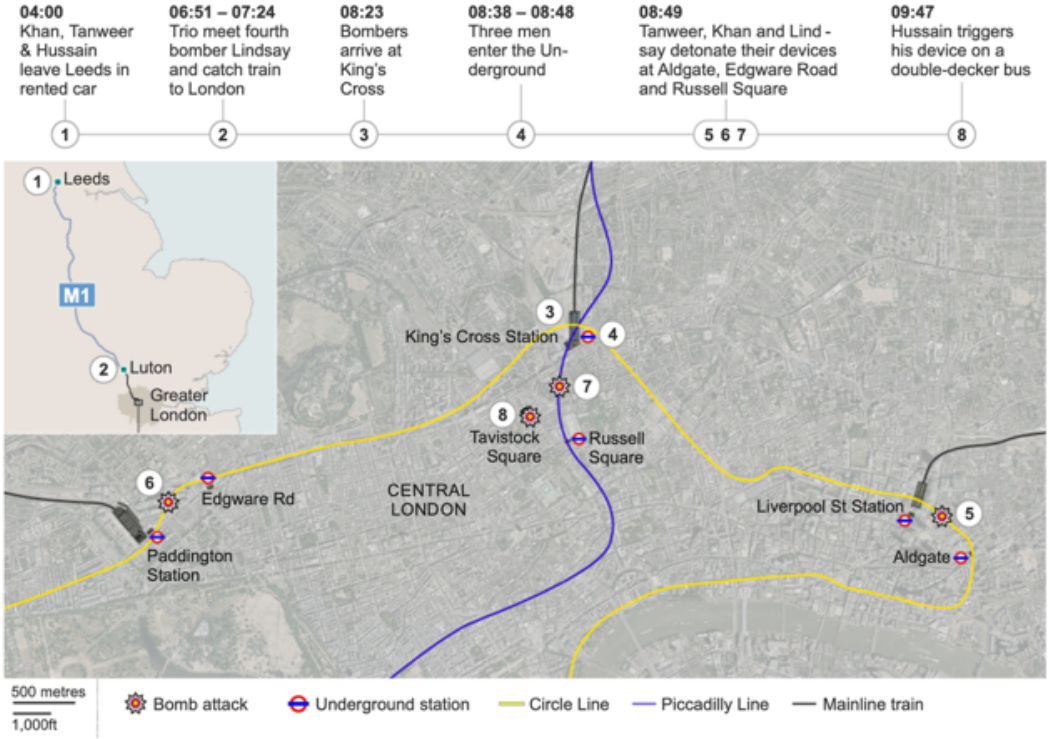

Fig. 2. Map showing the sites of detonation across London and nearby underground stations.[8]

Advertised surveillance and covert observation work together to prevent and identify threats. The relationship of these interventions plays on the mentality of an individual. Geoff Dunmore, Operational Security Manager of the London Underground, writes that 'Passengers continue to see a highly visible presence of British Transport Police across the Tube network. There is a need to balance increased Police visibility that provides reassurance with levels of visibility that cause alarm'[9]. Some standard architectural interventions are, at times, detrimental to the security of the underground. Places in which you can deposit or place items: bins, seats, sills and lintels[10] have been minimised. This is exemplified in all new designs for underground stations, figure 3 shows the main circulation space design, with clean aesthetic and high ceilings, giving an impression of transparency. The space is also evidently void of such aforementioned architectural accessories, and doesn't afford space to conceal threat. This alludes to safety, because of the trust in our own primitive senses, of our immediate environment.

Space comes at a premium as you go deeper into the ground. The Piccadilly Line, one of London's oldest, opened in 1906[11], and still uses many of the same cramped passages and tunnel network (Fig. 5.). Visibility is compromised and the exposure afforded upstairs cannot be implemented here. Devices in figure 4 show how hidden corridors can be exposed and opened up to some of our senses so that we trust the space more. The Piccadilly line suffered the greatest number of fatalities for a number of reasons.

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[7]Janet Semple, *Bentham's Prison, A Study of the Panopticon Penitentiary* (Oxford Scholarship Online: October 2011) chap. 4 <http://www.oxfordscholarship.com/view/10.1093/acprof:oso/9780198273875.001.0001/acprof-9780198273875-chapter-4> [accessed 14/10/18]

[8]Fig. 2. Lucy Rodgers, Salim Qurashi, Steven Connor, *7 July London Bombings: What Happened That Day?* (London: BBC, 2015) <https://www.bbc.co.uk/news/uk-33253598> [accessed 20/12/18]

[9]Geoff Dunmore, *Safety and security on the London Underground,* (Intelligent transport, 2007) <www.intelligenttransport.com/transport-articles/1731/safety-and-security-on-london-underground/> [accessed 12/1/19]

[10]Geoff Dunmore, *Safety and security on the London Underground,* (Intelligent transport, 2007) <www.intelligenttransport.com/transport-articles/1731/safety-and-security-on-london-underground/> [accessed 12/1/19]

[11]J. E. Connor, *London's Disused Underground Stations,* (Middlesex: Connor & Butler, 2001) pp. 28

Fig 3. Tottenham Court Road Ticket Hall Crossrail station proposal.[12]

Fig. 4. Example of improving visibility around passages.[13]

Fig. 5. Example of narrowness and claustrophobic nature.[14]

[12]Fig. 3. Crossrail, *Tottenham Court Road Station,* (London: Transport for London 2019) <http://www.crossrail.co.uk/route/stations/tottenham-court-road/> [accessed 11/9/2019]
[13]Fig. 4. Own Image, 2018, Example of improving visibility around passages
[14]Fig. 5. Own Image, 2018, Example of narrowness and claustrophobic nature.

Figure 6 shows how the fourth busiest underground line still operates on a single track. The feeling was of packing sardines. Each car of the 1973 stock is isolated so there is no flow of circulation within the train. Therefore, when the explosive detonated, the blast was concentrated within the car. There were fewer injuries because the debris did not cover as much ground, but the impact of the blast killed 26 within the car[15]. To add to this, the blast was 60 ft below the surface[16] in a single track arched tube tunnel so the blast was deflected by the solid walls. I believe a strategy to make the line more breathable and open, would make the line safer. This would not only help practically, but also give passengers a feeling of confidence in the security system.

The risk associated with these attacks involves not only the those passengers in direct contact with the blast but those above ground. Thought must be given to the way in which systems will collapse, especially underground. However, this principle is one to be dealt with lightly; otherwise the 'atmosfear'[17] of the network is elevated. 'The anticipation and integration of catastrophe into the designs of iconic buildings, such as a stadium engineered to collapse in a particular way, also contribute to an atmosphere of fear'(Ellin 1997; Massumi 1993)[18]. Thankfully the explosives were of a size which did not affect the structural integrity of the shafts, and people could seek help through the alcoves and maintenance tunnels. On the Circle Line, where the two other blasts occurred, the track is much closer to the street level (as shown in figure 7), but far more breathable and open as a space.

Breathable space allows fluctuation in circulation; disrupting this flow causes a series of problems for the system and has psychological impacts on everyone. Ever since the initial expansion of the Circle Line to Hammersmith, trains terminated to change service at Edgware Road[19] meaning people must change trains in order to continue along the Circle Line (Figure 9). What is particularly troubling is that the bomber was travelling anticlockwise from King's Cross. He would have had to change at Edgware Road, before proceeding to detonate the device between Edgware and Paddington (Fig. 2.). The change of trains unsettles passengers and incites frustration and irritation[20]. This demonstrates the greatest physical intervention on the Underground in the prevention of flow and circulation, even though it isn't primarily a safety procedure. Was the impact of this intervention a positive or negative one on the bomber? Did it de-stabilize and panic him to deviate from a plan that could have caused the deaths of many more at Paddington? Or was it detrimental to him detonating whilst he still had the chance? Each individual reacts differently, so we can only distil his motives from the movements we find on the vital CCTV records.

Figure 8 shows that it is not just the static architecture that requires breathable flow. The cars of the S7 and S8 stock allowed passengers to move from the blast, and meant that the blast radius was not concentrated, thus the shock-wave could be spread. There were only 13 fatalities on both Circle Line attacks combined[21]. Another critical condition was that this particular stretch of line has areas exposed to the open air and a double track layout throughout (Fig. 7 & 10.), so the shock was dissipated.

Forensic Architecture's methodologies involve only the first two stages of Stern's forensic analysis[22]: 'The method consists of four steps designed to contextualize, reconstruct, dissect, and then analyse a crisis from different perspectives. The steps are contextualization, chronology/narrative, decision occasions, and thematic comparison'. Forensic Architecture focusses on site reconstruction, by utilising open source data[23] and collating it through several computer programs[24]. Eyal Weizmann, founder of Forensic Architecture, describes the practice as 'the relation between an event and the spaces in which it is registered, and the relation between the evidence presented and the forum (such as the court or the media) that is sometimes called up and assembled by the evidence itself'[25]. To gain a better understanding of the impacts of each explosive, I located the exact positions of detonation and photographed the surrounding environment (Fig. 8, Fig. 11.). This was my alternative method of site reconstruction. Moreover, the fact I was actually at the site, rather than a virtual presence, meant my senses were immersed in the real experience of place. This human connection to the events in a location is something that can never be replicated and shows a weakness in Forensic Architecture's workings.

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[15]Lucy Rodgers, Salim Qurashi, Steven Connor, *7 July London Bombings: What Happened That Day?* (London: BBC, 2015) <https://www.bbc.co.uk/news/uk-33253598> [accessed 20/12/18]
[16]J. E. Connor, *London's Disused Underground Stations,* (Middlesex: Connor & Butler, 2001) pp. 31
[17]Greig Crysler, Hilde Heynen, *The SAGE handbook of Architectural Theory,* (England: SAGE Publications Ltd, 2008), pp. 259
[18]Greig Crysler, Hilde Heynen, 2008, pp. 260
[19]Andrew Martin, *Edgware Road: The interchange from hell,*(London: Evening Standard, 2009) <https://www.standard.co.uk/news/edgware-road-the-interchange-from-hell-6715210.html> [accessed: 12/1/19]
[20]Andrew Martin, 2009
[21]Lucy Rodgers, Salim Qurashi, Steven Connor, *7 July London Bombings: What Happened That Day?* (London: BBC, 2015) <https://www.bbc.co.uk/news/uk-33253598> [accessed 20/12/18]
[22]Greig Crysler, Hilde Heynen, *The SAGE handbook of Architectural Theory,* (England: SAGE Publications Ltd, 2008), pp. 261
[23]Alice Bucknell, 'The Threshold of Visibility', *ICON,* May 2018, Issue 179, pp.129
[24]Forensic Architecture, *Chlorine Gas Attacks in Douma, Syria,* (London: Goldsmiths University, University of London, 2018) <https://www.forensic-architecture.org/case/douma-chemical-attacks/> [accessed 11/9/19]
[25]Eyal Weizman, Paulo Tavares, Susan Schuppli and Situ Studio, 'Forensic Architecture', *Architectural Design*, September 2010, Vol.80(5), pp.60

Fig. 6. The Piccadilly Line showing the confined space.[26]

Fig. 7. Breathable space afforded at Paddington along the circle line.[27]

Fig. 8. The expansive flexible interior of the Circle line S7 stock.[28]

[26]Fig. 6. Own Image, 2018, The Piccadilly Line showing the confined space.
[27]Fig. 7. Own Image, 2018, Breathable space afforded at Paddington along the circle line.
[28]Fig. 8. Own Image, 2018, Fig. 11. Looking out from Edgware Road back to site of detonation

Fig. 9. Disrupting flow by changing trains at Edgware Road.[29]

Fig. 10. The Circle/District line looking back from Paddington.[30]

Fig. 11. Looking out from Edgware Road back to site of detonation.[31]

[29]Fig. 9. Own Image, 2018, Disrupting flow by changing trains at Edgware Road.
[30]Fig. 10. Own Image, 2018, The Circle/District line looking back from Paddington.
[31]Fig. 11. Own Image, 2018, Looking out from Edgware Road back to site of detonation.

There is a disconnect in the extent to which Forensic Architecture conducts analysis and the influence it has on real-world implications. The court of law rules most cases insufficiently evidenced, and eventually they are presented as exhibitions in the Royal Institute of Art[32] further promoting the rise of the 'atmosfear'[33] for entertainment. Clearly the investigative research and propositions should be exhibited as 'good work'. However, after Forensic Architecture's nomination for the Turner Prize in 2018, its 'artist' status may de-value the investigations. 'Forensic Architecture winning the Turner Prize would risk turning sensitive essential investigative work into insensitive frivolous entertainment'[34]. However, portrayals of devastation for entertainment are not new to the media. 'Forensics has taken hold of the popular imagination; a panoply of TV shows with a forensic approach emphasizes the viewer's role as investigator presenting exhibits of evidentiary traces that prompt the viewer to reconstruct criminal behaviour or disastrous chains of events (Rugoff 1997)'[35]. Statues and memorials have the potential to generate a paranoid architecture. They are primarily reminders of lost and loved ones, but also monuments to the tragic events, establishing that terrorism has made its mark on the site. A lack of this architecture around the Underground entrances generates a confidence for the public, respectfully.

Conclusion

The architectural devices used to police, manage and minimise risk of attack in the public realm primarily involve a minimalist design approach to space. This results in a decrease of opportunity for threat to occur, rather than physical barriers and interventions. Some of the physical interventions have actually proved detrimental to the security of the Underground Network as they can destabilize people and cause frustration leading to unpredictable scenarios[36]. Physical features further provide opportunities for static circulation where items could be placed or hidden including, but not limited to, explosives. The most effective devices have been the breathability and transparency of space, for monitoring and observation. This form of space is easily surveyed by the public who then instinctively trust their own primitive senses, consequently developing a confidence within the space. CCTV also functions well in these spaces, and although an example of paranoid architecture, stemming from Panopticism[37], is a useful and effective method of monitoring to reduce risk. This is balanced by the human presence of armed personnel that provide further security to the public[38] and deter threat by being distinctly visible. Spaces that suffer from not affording clarity of sight can employ subtle devices to further expose the space visually, such as the curved mirrors installed throughout passages of the Piccadilly line.

[32]Alice Bucknell, 'The Threshold of Visibility', *ICON,* May 2018, Issue 179, pp.122-130

[33]Crysler writes of 'atmosfear' serving as a pedagogical device that produces fear, legitimates authoritarian state power, and mobilizes a political economy of disaster. Greig Crysler, Hilde Heynen, 2008, pp. 259

[34]Phineas Harper, *Forensic Architecture winning the Turner Prize would risk turning sensitive investigative work into insensitive entertainment,* (London: Dezeen, 2018) <https://www.dezeen.com/2018/05/04/forensic-architecture-turner-prize-warning-phineas-harper/> [accessed 15/11/18]

[35] Greig Crysler, Hilde Heynen, 2008, pp. 261

[36]Andrew Martin, *Edgware Road: The interchange from hell,*(London: Evening Standard, 2009) <https://www.standard.co.uk/news/edgware-road-the-interchange-from-hell-6715210.html> [accessed: 12/1/19]

[37]Janet Semple, *Bentham's Prison, A Study of the Panopticon Penitentiary* (Oxford Scholarship Online: October 2011) chap. 4 <http://www.oxfordscholarship.com/view/10.1093/acprof:oso/9780198273875.001.0001/acprof-9780198273875-chapter-4> [accessed 14/10/18]

[38]Geoff Dunmore, *Safety and security on the London Underground,* (Intelligent transport, 2007) <www.intelligenttransport.com/transport-articles/1731/safety-and-security-on-london-underground/> [accessed 12/1/19]

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