Countering Terrorism in the City

Abstract: Seen through the eyes of a determined terrorist the city is full of opportunities. Car bombs, hidden explosives, toxic gases, handheld weapons; they can all be used to devastating effect on a crowded city street. While intelligence gathering, surveillance and police presence are key counter terrorism tools the last line of protecting potential targets are typically barriers and security checks. These additions to the cityscape can be an inconvenience, add little to local aesthetics and constantly remind us of the ever-present danger of terrorism. The Designing Out Crime Research Centre undertake projects which aim to protect Sydney from such attacks in ways which are sympathetic to the local environment and to the untrained eye have little connection to protection against terrorism. This paper outlines the threats to the city and countermeasures illustrated by case studies including projects for Sydney Rail, and the Sydney Opera House.

Introduction

The city is the ideal location for a terrorist incident. From the perpetrator's perspective there is a richness of targets, panic is a probable outcome possibly offering escape opportunities and best of all cities provide the perfect backdrop for media savvy bystanders to ensure the chaos is instantly communicated around the world. Since the 9 11 attack in the USA a vast amount of resources has been devoted to protecting cities against such incidents, mostly in the form of intelligence and surveillance. The long-term indirect costs of terrorism, such as disruption to business, infrastructure disorder and victim care, can be 10 to 20 times larger than direct costs, a statistic that helps justify expenditure in this field (ref 1). Cities have not been designed or planned with a terrorist attack in mind so changes to the infrastructure are inevitably add-on or retrofit. At worst this add hock approach results in large concrete blocks or razor wire surrounding "vulnerable" assets, at best long queues at security checkpoints. The design response to the risk of terrorism, and how design might be more effectively employed is the subject of this paper. The first section will review the risk of a terrorist incident in an Australian city, the second a summary of official advice on what should be done to counter or lessen an event within city boundaries and finally strategies designed to protect against terrorism while adding value to the cityscape.

Risk of a terrorist incident in an Australian city

In the global context Australian cities are considered to be at low risk of a terrorist incident. The Global Terrorism index 2014 ranked Australia at 95 out of 121 countries that have experienced a direct or indirect result of terrorism (ref 2). However following the café siege in Sydney and recent arrests of suspects accused of planning incidents in Victoria and Queensland the Australian security alert level has been set at high, namely that "a terrorist attack is likely" (ref 3). Despite the high risk level the chance of any one individual being a victim of a terrorist incident on Australian soil is extremely low. It is a classic example of a scenario with a low likelihood of occurring but resulting in extreme consequences for those involved. While Australia is unlikely to be subjected to a co-ordinated ISIL or al-Qaeda operation security organisations believe there is a real possibility of a "black swan" (unknown and unpredictable) or "lone wolf" incident, of which the Norwegian event in 2011 resulting in 77 deaths is an example. The presence of individuals or groups in the community with a deep sense of grievance to society will always constitute a risk. Frustration and a sense of injustice have a habit of boiling over in violence. Ultimately risk has to be estimated against a wide range of possible futures; some of those futures are, of course unknown. It should not be unexpected therefore that resources tend to be directed to protect against the kind of attacks we do know and are familiar with such as car bombs, air hijacks, or backpack explosives. However it is the novel approach, the unexpected that will often cause the most disruption and community cost. For example liquid explosive in a soft drink bottle has never resulted in an explosion on an aircraft but the possibility one might find its way on-board has cost billions of dollars and much inconvenience. Australian public concern ebbs and flows in accord

with incidents, particularly those occurring in the OECD, for instance the international concern following the Paris Charlie Hedbo attack. From the terrorist point of view an attack offers high reward for potentially little outlay. The reward is publicity to the cause, cost and disruption to the community and for some the chance to become a martyr. On the other side of the fence fear of terrorism can be a tool for political advantage; efforts to control terrorism is a popular policy initiative. For others such fears can be used to justify prejudice by encouraging suspicion of minority groups who may threaten the status quo. Terrorism is now firmly embedded in our collective psyche and there is little chance concerns that extremism might result in violence will decline any time soon. In response counter terrorism has become an industry, a major area of academic study, and a considerable drain on the public purse. In part this response has resulted in recommendations to protect city infrastructure with potentially lasting consequences on the look and feel of public places.

Current design guidelines on counter-terrorism

Western countries that have experienced major terrorism incidents involving explosives and active shooters in cities (for example UK, USA, Spain) have developed, along with comprehensive counter terrorism (CT) procedures, design guidelines to planners and architects to eliminate or seriously inhibit a serious incident in crowded places (ref.4). Australian counter terrorism units (Federal and State Police) have endorsed most of these guidelines and developed their own (ref 5). They work with local authorities, businesses and utility providers to ensure the recommendations are introduced when and where appropriate. These design guidelines have a number of aims, in summary they include reducing the opportunity of a hostile vehicle containing explosives getting within range of a potential target; reinforcing valuable assets should defences fail, and advising on material selection to lessen the secondary impact of a blast. Many of the design guidelines, particularly in the UK, demonstrate how CT measures can blend successfully with new or existing infrastructure and hopefully add a positive aesthetic to the environment (ref 6). While guidelines are freely available there are no compulsory standards relating to the built environment to protect against terrorism in Australia. Indeed the built environment is not mentioned in the most recent review the Department of Prime Minister and Cabinet CT Review. (ref 7). CT Police will normally offer advice on particular projects only when requested. It is rare that counter terrorism measures are incorporated in new building projects in Australia, government assets being the exception. The White Bay Cruise terminal is an example of a new infrastructure project where CT has influenced the design (ref 8) (image1).

image 1: White Bay Cruise terminal incorporating hostile vehicle mitigation measures

Incorporating counter- terrorism design principals into the mainstream

Architects and designers like most professions must continually update skills and knowledge in numerous spheres such as technology development, social attitude, science advance and the more formal requirements set by governing bureaucracy. Often these fields enter a new paradigm, overlap and become a discipline in their own right, a good example being environmental sustainability. Sustainable design quickly became an offshoot of the profession with its own theories, standards, technologies and specialist practitioners. The discipline has gone from a niche pursuit to a mainstream activity within a relatively short period, as a response to the oil crisis in the early seventies (ref 9). It is possible that designing out opportunities for terrorism maybe in the early stages of developing a discipline in its own right. As with any new

movement, this would depend on the magnitude of support from authorities and the community. Successful attacks resulting in deaths and injury would be the catalyst for such a shift relative to CT. It could be argued that in the absence of such an event communications to the public on CT from politician's and government agencies are designed to heighten fear of terrorism in an attempt to bring about change in attitude and response (ref 10). However where there is a significant cost implication the stakeholders (bureaucrats, planners and designers) are unlikely to react unless mandated to do so. In the absence of legislation CT is unlikely to feature in the brief of new buildings or infrastructure. However the idea of involving design in prevention of a wide variety of crime is gaining traction around the world. Centres offering consultancies, research and courses in design and crime have been established in the UK, Australia, Holland, with additional work being done in Korea and Japan (ref 11). The number of books and papers published on the topic has also increased (ref 12). Design and crime have been formally linked since the 1960's with the creation of a set of principals established to reduce theft, assaults, property damage and anti-social behaviour in the public domain. Called Crime Prevention Through Environmental Design (CPTED) the principles have been adopted throughout the world particularly in planning of public spaces and their relationship to private places (ref 13). CPTED however has little to say on such topics as the design of buildings, public artefacts (i.e. street furniture), and products in general or terrorist activities in particular. Even so when implemented fully CPTED ideals contribute to preventing terrorism and aid law enforcement in improving surveillance where terrorism might be considered a risk. Designing Out Crime Centres have attempted to go beyond CPTED by employing methods normally associated with the creation of new products or systems. These methods have been refined to resolve complex crime related situations that seem to defy conventional approaches. It is the combination of CPTED and the new ways of approaching crime from a design perspective that may hold the best chance of bringing CT into mainstream design without imposing prohibitive cost to the community.

Reframing the threat of terrorism

Seen in isolation protecting a city against terrorism will nearly always result in a defensive response, building physical or virtual walls. This may well be appropriate in some instances for example where there is an exposed building deemed to be a potential target. There is however a possibility those positive attributes of a city are undermined on the pretext of terrorist prevention. One such positive is the use of open spaces in cities. Over the last decade design of public spaces have progressed into places that are actively encouraged as a rendezvous destination, a place to enjoy, spend time and reflect rather than simply exist as a space located between destinations. Where people gather, such as in a public square, there is a potential for a terrorist attack. Much literature on CT concerns places of mass gathering, primarily the protection of people in transport hubs, sport stadiums etc. but include open spaces in cities (ref 14). CT recommendations for such places include defensive bollards to guard against hostile vehicles, personal protective cover in the event of an active shooter incident and control over access and egress points. Retrofitting these requirements can negatively impact the function and aesthetics of these carefully considered places. There are other points in the city that might also be considered a risk; they include prominent structures with heritage listing, buildings with a political significance and places likely to attract tourists, theatre or club goers. All such places have their own individual context with specific terrorist related concerns. It is the view of the Designing Out Crime Research Centre (DOC) that such places and buildings can be protected from a range of crime from pickpocketing to terrorism without depreciating function or appearance and in many cases enhancing the venue and the environment. This is achieved through a nine-step process that "reframes" the issue in ways that attempt to satisfy all stakeholders (ref. 15). The process is described in the following case studies.

Case studies

Sydney Rail Following a number of terrorist attacks overseas in 2002 there was concern in Australia that explosive devices might be detonated in public places. Of particular concern were transport hubs and rail stations. To reduce this risk it was decided to remove rubbish bins from all city stations and replace them with notices requesting patrons take their litter home (ref 16). Over

the following years the stations, train carriages and tracks became noticeably unkempt and despite additional cleaning staff the situation deteriorated. In 2010 public feedback listed rubbish and the lack of bins as an issue of major concern equal to timetabling and over crowding (ref. 17) Over the years Sydney Rail had searched for a bin that meets both their needs and those of the counter terrorist squad, responsible for dealing with a device should an event occur. A suitable design was not found. In 2009 DOC worked with Sydney Rail (then Rail Corp) to resolve the situation employing the frame creation process (ref.18). The first step in the reframing process is to explore the archaeology of the situation. Apart from the history cited above research revealed that there was only one known event of an explosive device detonating in a rubbish bin, in a park in the USA (ref.19). The second step in the process is to establish the core paradox. Complex problems often contain opposing views that appear irreconcilable; defining these contradictions provide valuable insights in addition to being useful references later on when considering solutions. An inconsistency in this instance is the desire to provide safe, clean and pleasant transit while removing a key plank in the system essential to achieving this goal; rubbish containers. Step three is chronicling the immediate context of the problem. When papers related to bin removal were scrutinized carefully the real issue turned out to differ substantially from the stated problem. Both CT police and Sydney Rail in fact considered an exploding rubbish bin a highly unlikely event. The police however were concerned that should there be a suspicious item in a bin their bomb disposal team would be required to undertake extensive and time consuming processes firstly to determine the extent of the threat and then eliminate the threat. For Sydney Rail the key problem was the far more likely occurrence of a bogus bomb threat and the subsequent disruption to the service. Step four is to look towards the wider field and any secondary influences. This step revealed removing the bins had a number of knock on effects including disputes with venders distributing free newspapers as they were responsible indirectly for increasing train litter; an associated increase in graffiti (uncared for places are more susceptible to anti-social behaviour) not least were staff stress and frustration coping with patron complaints. Step five begins to redefine the problem; it is entitled “themes”. Typically this involves workshopping analogies or themes that emphasise the positive over the negative. In this case themes were developed around the notion of communicating cleanliness, safety, and transparency. Step six is the major key to devising solutions – creating a new frame that will form the foundation for a detailed brief. Based on the themes and earlier research the ultimate frame for the bin design was “response speed, clarity of function, sustainability” This gave a frame for designers to conceptualise the future, which is step seven. Designs that not only provided a rubbish receptacle but also facilitated recycling in ways in which mistakes were less likely; opportunities for station staff to safely check contents; and in worse case scenarios a means by which police can confirm the presence of a suspicious device quickly and remove contents safely. Step eight is transforming. Transforming the physical but more importantly altering attitudes of all the stakeholders: managers and purchase decision makers, station staff, cleaners, police, and patrons. Much of step eight occurs in earlier steps but comes to a climax when visualisations of solutions become available. Finally step nine – integration. Building prototypes, bench testing, refining design, on-site testing, evaluating, tendering, batch construction, installing on platforms, publicity launching, and service provision. Key design features of the new bin, now in service throughout Sydney Rail, are: modular design, contents visible through transparent walls and waste bag, minimised openings, reduced bin depth, x ray facility, robotic door opening capacity. (image 2.)

image 2: Special purpose rubbish bin for Sydney Rail

Opera House The Sydney Opera House is probably the most iconic building in Australia. This makes it high on the list of potential terrorist targets. Not unexpectedly there is an exceptional security system protecting the House, most of which is out of sight to visitors. However security has been breached on a number of occasions not by terrorists but by demonstrators displaying messages on the sails overlooking the quay (ref.20). All breaches are a concern and the House was keen to explore ways to increase security without increasing staff or limiting public access in and around the building and surrounding forecourt. The issue is made complex by the UNESCO heritage listing; rightly any changes to the superstructure or infrastructure must be subjected to a rigorous approval possess based on the Utzon design principles, set out by the architect on completion of the building (ref.21). These principles and the mechanisms by which the heritage standing was protected formed a crucial component during the reframing process. It is a formable challenge and in fact a paradox that a building that attracts terrorists and protestors cannot be adapted or enclosed. Within the House management system physical changes of any sort will likely impact many departments and responsibilities apart from security. They include heritage architects, event organisers, caterers, maintainers, and Board members. Outside the House the circle of stakeholders is far-reaching including City of Sydney, Harbour Foreshore Authority, Tourism NSW, NSW police, other local services and not least the general public. Following discussions with these groups a number of issues arose that became keys in developing concepts. Stone slabs form the extensive podium surrounding the House. These slabs are frequently lifted to maintain drainage, power and communication services. Unfortunately the gaps between slabs are ideal traps for high heels; worn frequently on opera and theatre evenings. Damaged ankles are so frequent a nurse is on duty most evenings. A more positive discovery was the use of the podium at sunrise for informal groups to exercise, meditate or engage in Tai Chi. Based on positive themes of liveliness, spiritual uplift, and sense of space the problem was reinterpreted away from the single issue of terrorism. Reframed in this way designers could explore enriching the experience of discovering the House by adding temporary “pop ups”, special events, and ways for visitors to connect and reflect. These activities would have imbedded security and safety features, in part by increasing passive surveillance over an extended period and also by strategically placing temporary objects in vulnerable areas to prevent climbing the sails. Building on the theme of space and discovery one design concept took advantage of the podium slabs and their fixing method. The idea involves installing sensors underneath and lighting around the slab edges. The lighting could guide visitors along predetermined routes and also warn of the gap. The sensors would alert security to abnormal traffic movements in the early hours when the House is most vulnerable. (image 2) These proposals were particularly sensitive to preserving the principals of the UNESCO heritage listing.

image 3: proposed slab lighting for external podium

Conclusion

In 2011 Athol Yates, (Australian Security Research Centre) calculated that the Federal Government spent about $10.5 billion on homeland security, while state and local governments plus private industry spent a further $5.5 billion (ref.22) By reframing counter terrorism in the context of building more sustainable, healthy and enjoyable cities much of this expenditure could have a lasting value that went further than defending against an attack. It may seem counterintuitive that that these two goals are compatible however there are now reliable processes capable of resolving complex scenarios as demonstrated in the case studies above. It is often the introduction of a new unexplored factor in a design problem that creates an avenue for a highly innovative result. Protecting citizens in the city against a hostile act adds another dimension for city planners and designers to consider, rather than viewed as a challenge "reframing" changes such problems into an opportunity.

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Images

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2. *Rubbish bin for Sydney Rail manufactured by Hub Street Equipment 2012*
3. *Proposed outdoor lighting guidance system by UTS students 2013*