Crime Prevention Through Environmental Design in the United Arab Emirates: A Suitable Case for Reorientation?

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In the field of CPTED, theorists and practitioners alike readily acknowledge the need to design buildings and layouts that closely fit the local context and wider design requirements, including aesthetics, social conditions, and development and construction constraints. Crime prevention functions cannot simply be imposed or bolted on while ignoring local circumstances and other priorities such as energy conservation. But getting crime prevention designs to work successfully can be tricky because they rarely act directly (as with putting high walls around a building),but exert their preventive effect by motivating and directing the actions of people such as residents, managers and passers-by, and deterring offenders. Crime prevention designs for the built environment can thus rarely be mass-produced but must be customized to local conditions. CPTED evolved in Western countries, with commonalities of culture and built environment, despite variations, for example, in climate between Northern Europe and Australia. Transferring CPTED to other regions such as the United Arab Emirates therefore poses even more of a challenge, where there are marked differences not just in terms of climate but also in culture pertaining, for example to privacy, ownership of property, development control and tradition. Recent experience in researching international good practice and standards for application in the Emirate of Abu Dhabi, is used to illustrate these contextual differences, to draw broader lessons for CPTED, and to discuss the challenges to cross-cultural knowledge transfer in crime prevention.

Part 1. BACKGROUND

The Significance of Context in CPTED

'Context is everything.' This is the slogan on the website of the UK Designing Out Crime Association – the professional organization for police, local government officers and colleagues involved in the practice of Crime Prevention Through Environmental Design (CPTED). The importance of context is challenging enough when seeking to transfer good practice, and theoretical principles, of CPTED from, say, housing estates in Northern England, to suburban Australia or a refurbished Croatian city centre. How much more so if – as in this paper – the target practitioners are planners and designers operating in the Middle East?

Context cannot strictly be *everything*, of course – otherwise there would be no core principles to contextualize; but the point is well taken, and worth pursuing. To architects and developers professionally interested in the built environment, context embraces many issues: from culturally favoured style and aesthetic principles to planning and development control, via climate and earthquake risk. To those concerned with the environment, sustainability features strongly, covering energy, water, habitat loss, pollution and scarce commodities. To those prioritizing social issues, gender-equality, inclusion (of the disabled, the poor or ethnic minorities), cohesion and equitable distribution of amenity are centre stage. Public health, education, transportation – the list of contexts continues.

Crime collides with all these contexts, as does crime prevention of all kinds – but especially through environmental design. Vandalism blights aesthetics; prevention, done badly, can impose an ugly fortified appearance or restrict amenity. Crime can remove copper cabling, halting trains and cutting telecommunications; and criminals can illegally dump waste, spoiling amenity and perhaps causing health problems. Crime prevention can disturb sleep via false burglar alarms, invade privacy through CCTV, and obliterate night skies with excessive lighting. Crime and crime prevention have a clear carbon footprint (Pease, 2009).

Ekblom (2008, p. 210) has described these issues as 'troublesome tradeoffs'. But crime prevention's gain need not always mean other values' loss, or even half-hearted compromise. The art of good planning and design is the creative reconciliation of conflicting or competing requirements. To resolve these tradeoffs effectively, planners and designers, working with clients and users of all kinds, must capture all these requirements clearly and early, and identify priorities. They also need the fullest map of contextual issues because resolving one conflicting pair of requirements, say, may exacerbate others.

The context of crime and its prevention is also important in another way which is of great theoretical, empirical and practical significance for the transfer of CPTED practice from one place to another. Attempts to replicate 'success story' projects in crime prevention often fail. Whether these are one-off emulations in a single new locale, or rolling-out of a major programme, implementation failure is a major weakness (Ekblom, 2011*a*; Homel and Homel, 2012). Underlying such failure is the fact that crime prevention can rarely be a universal, 'spray-on' treatment. It often operates by triggering quite delicate causal mechanisms needing particular contextual preconditions to be met for the intervention to work (just as starting a fire needs not only matches but also fuel, oxygen and dry, still conditions).

Although interventions like constructing high walls round an industrial estate can directly and literally block some crimes, the majority of preventive methods work, indirectly, through people and their perceptions, goals, moods, decisions and actions. Sometimes their preventive effect comes via motivating and directing the actions of, say, residents, managers and passers-by to act as crime preventers or cease acting as crime promoters (Ekblom, 2011*a*). Other interventions deter or discourage offenders by acting on their perceptions of the prospects and consequences of attempting to commit crime; or alter their motivation or emotions by, for example, supplying legitimate entertainment facilities or alleviating the stress of uncomfortable travel. To be effective, crime prevention designs in the built environment can thus rarely be mass-produced but must be subtly customized to local conditions.

Academically speaking, the key to understanding risk factors of crime, and its prevention through the built environment, is knowing how the causes of criminal events *interact*. Interactions describe how two or more independent causes combine to create an effect (or pattern of effects) markedly different from the mere sum of the individual contributions. For example, a locality's street lighting, territorial motivation of residents and their surveillance acumen may come together to generate unique patterns of resistance to (or opportunity for), crime.[1] In the built environment particularly, mechanisms that cause or prevent crime are likely to reside in *configurations* in space (Ekblom, 2004) such as particular geometrical arrangements of sightlines, barriers, lighting and access/escape routes which give tactical advantage to offenders or preventers. Such configurations may have a time dimension too, reflecting activity cycles like rush-hour congestion.

Beneath the superstructure of interactions and configurations we also have concerns with the key *concepts* of CPTED. Ekblom (2009, 2011*b*) queried the fitness of the entire suite of CPTED concepts, considering them vaguely expressed, overlapping and generally incoherent. Reynald (2009) likewise finds terms like 'guardianship' difficult to measure directly, and understanding of underlying mechanisms underdeveloped. These concerns are as much practically as academically motivated as professional action and attention to context requires precision tools for thinking and communication – especially where international knowledge transfer is concerned. Much of the concepts' meaning may be conveyed through buried, unexamined, cultural assumptions.

Context also resides in the *process* of doing crime prevention, and the operating environment of governance, stakeholders etc. within which that process is undertaken. We agree with Kitchen (2009) and Monchuk (2011) that CPTED itself lacks a detailed process model. The most we can currently sketch in is something high-level like 'plan site, design, obtain planning/construction approvals, build, manage, do minor refurbishment, do major refurbishment'. Design itself has many process models – e.g. the 'Double-Diamond' model of the UK Design Council,[2] and crime prevention has the problem-oriented SARA and 5Is;[3] but none of these have yet been formally united with CPTED.[4]

And finally, there are implications both for content and for process in debate about the *scope* of CPTED. This has been expressed most clearly in the attempt to develop a 'second generation' approach (Saville and Cleveland, 2003*a,b*), which emphasizes the *social* context of cohesion and collaboration in determining what we can, and should, attempt to achieve within the built environment domain. Social factors and social interventions in interaction with the built environment are undeniably important, but the second generation approach can be criticized for bringing into CPTED too wide a range of interventions such that the distinctive 'environmental design' aspect is diluted, and a 'catch-all' approach is encouraged that lacks the discipline of the source domains.

Understanding these diverse aspects of context is important for both professional practice and research, as is CPTED's conceptual clarity and scope. But how can we pin down context, given that the fish is reputedly the last creature to discover the existence of water? Understanding the role of context is challenging within familiar Western settings. Understanding CPTED in more radically different settings might seem harder still.

But such settings offer opportunity besides challenge. As Kipling's poem[5] asks, 'And what should they know of England, who only England know?' Climate and details of governance apart, one can largely substitute 'Western nations' (though the meter is poorer). Studying how CPTED has adapted to diverse climates, cultures and countries, and might further

evolve in future, seems an excellent way of triangulating on contextual influences and issues; ones vital for knowledge transfer too.

Unfortunately, few studies exist of CPTED in non-Western contexts, and little international comparative research. The CPTED principles may have been presented differently by those writing policy and guidance, implementing the principles on the ground and working in different countries. But there has been little discussion of conflicts or tensions between these traditional principles and the context of a specific country. Although, for example, Armitage and Monchuk (2009) explored pinch-points between the agendas of sustainability and crime prevention and the resulting trade-offs and compromises this presents, this was all within the context of the UK – climate, culture and country differences constitute a significant unexplored third dimension.

This tendency affects the related field of situational crime prevention too. For example, of the guardianship studies identified by Hollis-Peel *et al.* (2011), seven concerned the US; two the UK; one the Netherlands; just one combined data from all three. Situational prevention is beginning to extend to developing regions – see for example Sidebottom (2012) on Malawi – but so far little on the built environment. One exception is practical work by Kruger (2005) in the more radically different context of post-Apartheid South Africa. A rare and useful comparison of the wider politico-cultural context of crime prevention is in Sutton *et al.* (2008), contrasting the authoritarian approach to crime prevention in Singapore with the more liberal counterpart in the West.

Aims of this Article

This paper begins to redress the Western bias. In particular it focuses on the extent to which traditional CPTED principles can be transferred to a Middle Eastern context very different from the UK in terms of culture, climate and country. The wider project upon which this paper is based was the production of guidance for use in Abu Dhabi, United Arab Emirates, described below. We seek to document some key findings from the research that informed this project and to identify wider processes and benefits of the comparison and transfer exercise.

Part 1 continues to address background issues, covering the strategic context for the research; knowledge transfer issues; and sources of information for the research. Part 2 presents the findings of the research both as these related to the guidance and were considered from wider angles, covering the geographical and cultural context of the UAE and Abu Dhabi in particular; the crime context; the issue of how best to articulate CPTED knowledge for transfer; the process and results of the benchmarking review of international practice; how CPTED principles applied to the local context; considerations of social cohesion; and finally, before the conclusion, a return visit to the technicalities of knowledge transfer.

Strategic Context for the Research – *Plan Abu Dhabi 2030*

The research arose as follows. *Plan Abu Dhabi 2030* is an ambitious government strategy: a comprehensive urban structure framework plan to guide planning decisions for the next quarter century during which time the city may grow to a population in the range of three to five million. The plan specifies land uses, building heights and transportation plans for the

entire Emirate of Abu Dhabi. It 'provides for large new areas of Emirati housing, inspired by the traditional family structures of the local community, and a diverse mix of affordable housing options for all the citizens and residents of Abu Dhabi'.[6]

To help realize Plan 2030, an early move was the establishment of *Estidama* (equivalent to 'sustainability'), an initiative[7] 'whose aim is to preserve and enrich Abu Dhabi's physical and cultural identity, while creating an always-improving quality of life for its residents on four equal pillars of sustainability: environmental, economic, social, and cultural'.

Plan 2030 envisages many buildings constructed and landscapes and neighbourhoods created. If the amount of building work currently underway and envisaged over the next decades were to happen in a Western context, it would be obvious (to many, but sadly not yet to all) that addressing crime and community safety should feature prominently in the planning and design requirement. The alternative would be a decades-long legacy of vulnerability to crime and disorder. The concern was that while so far crime had posed few significant problems for Abu Dhabi, there was no guarantee that external or internal changes afoot, including the massive development work envisaged, might not cause such problems to emerge in the medium term, and derail Plan 2030.

A large-scale exercise was therefore undertaken to anticipate, and head off, future crime risks. This centred on development of guidance to ensure the Emirate remained safe as it continued to grow rapidly and to attract a range of new and diverse activities, peoples and opportunities'. There was to be a significant emphasis on enhanced quality of life and preservation of the Emirate's unique identity.

Knowledge Transfer Issues

Producing the guidance raised significant knowledge transfer issues. Abu Dhabi is a favoured locale both for Western companies involved in development work, and for individual professionals in the development and crime prevention fields alike, hence the opportunity, the requirement and the challenge of knowledge transfer. But before this is accomplished, those who export the knowledge and know-how, and those who import it – whether by hiring Western professionals to practice CPTED or by building local capacity through guidance – should show some caution.

The knowledge transfer exercise in which we were involved, jointly with the Abu Dhabi authorities, was therefore based around a clear, evidenced and agreed set of understandings:

◆ Crime was currently low in international comparative terms (albeit that detailed local crime data were difficult to obtain).

◆ Given the anticipated residential, industrial and infrastructural development, global trends in the economy and climate, changing patterns of demography and migration, and regional crime trends, e.g. in Dubai, this fairly happy state could not, however, be assumed to continue over the coming decades – indeed, crime could come to outpace the rate of population growth.

◆ Crime statistics from Abu Dhabi Police showed an exceptionally low level of property crime; although still low in absolute terms personal crime was thus higher as a proportion of

total recorded crime than in comparison countries. The primary focus for the guidance was thus to reduce crimes against the person through changes to the built environment. This was to include all crimes apart from those that occur within private properties.

◆ To ensure Plan 2030 was robust to the full range of plausible future scenarios, and not prone to derailment should increased criminal potential manifest itself, prudence dictated that crime prevention should be well integrated within development.

◆ The existing local guidance literature, and the body of research supporting it, was however somewhat piecemeal and derived almost exclusively from Western contexts.

In Abu Dhabi, we were thus essentially starting from scratch on CPTED guidance on planning and design suited to the local context. There was an interest in seeing how other countries had addressed such guidance, but an awareness that its suitability for Abu Dhabi was unknown and that it needed systematic collation, assessment and adaptation before dissemination for guiding local development. A comprehensive project was therefore commissioned to prepare evidence-based and culturally and geographically appropriate guidance on the planning and design of safe environments and communities, in which all authors were involved.[8]

The guidance was to be based on an extensive benchmarking exercise to identify and review decrees, standards, policy, guidance and awards relating to the consideration for crime prevention within planning and development. The production of specific recommendations was to evolve from the detailed review of international evidence together with stakeholder workshops and site visits.

This was the point of departure for the project team; and the platform on which the current article builds, albeit for more academic purposes.

Information Sources

We base this article on several sources of information, mainly gathered for the guidance project but some expressly assembled for this article:

1. Limited investigation of the literature on Middle Eastern geography and Arab culture, supplemented by publicly-available Abu Dhabi documents.

2. Benchmarking – desk research in preparation for the Abu Dhabi work, comparing CPTED guidance and research material from around the world, with especial interest in identifying what might/might not be transferrable to the Abu Dhabi context.

3. Visits to Abu Dhabi during 2010–2011. This involved site visits, photographic documentation, and meetings and workshops with diverse local practitioners and stakeholders from agencies including police and development managers.

4. Analysis of local crime data played a limited role in the project as only the most aggregated totals and trends information were available officially, consistent with practice in the region but not, of course, with that in most Western countries. Anecdotal knowledge

from expatriate professionals and Emiratis (local residents of UAE origin, including officials and academics), together with crime clippings from local media, had to fill the gap, together with diplomatic reports.

5. This restricted supply of formal knowledge was brought together with our own experience (albeit in Western contexts) variously covering practice-oriented research, evaluation, and compilation of guides such as *Safer Places*. Additional material was gleaned from informal discussion with security and safety practitioners of Western origin who had worked in the Middle East including Abu Dhabi.

Part 2. FINDINGS

Geographical/Cultural Context – The UAE and Abu Dhabi

The Middle East, with highly distinctive climate, cultures and countries, is a good place to begin the exploration of CPTED in diverse geographical contexts. Despite commonalities, the Middle East is itself of course extremely diverse. Here, our focus is on the bustling and gleaming modern cityscape of the Emirate of Abu Dhabi, on the southern coast of the Arabian Gulf. (Note that Abu Dhabi is the name of both the Emirate – among seven such emirates including also Dubai – and the capital city of the Emirate. The President of UAE is customarily the Emir of Abu Dhabi.) Abu Dhabi Emirate's total population reached 2.12 million in mid-2011, with an average annual growth of 7.7 per cent, one of the highest rates in the world. Nationals – Emiratis – account for only about 21 per cent of the population (see SCAD, 2012, p. 119). The great majority comprise expatriates, a highly diverse mix of professionals from the West and elsewhere in the Middle East and beyond, and South Asian and Philippine workers many of whom are in the construction trade, domestic servants or service providers such as taxi drivers. Immigration of these groups accounts for much of the population growth (although Emirati birth rates are also high by developed nation standards) and also a significant male/female imbalance (2.4:1 in 2011, see SCAD, 2012, table 3.1.4).

Culture

Despite enthusiastically entering the global economy Abu Dhabi retains much of its traditional Arab and Islamic culture. Family loyalty and obligations take precedence over loyalty to friends or demands of a job; relatives must defend each other's honour and display group cohesion (Nydell, 2006). Nonetheless there is a growing tendency for residential patterns to reflect the nuclear rather than the extended family, clan or tribe.[9] Parental authority over young people remains strong, though not so absolute as before, especially given opportunities of increased physical mobility. Available statistical indications are limited but news clips from UAE as a whole describe gang fights, knives and drug use.[10] Typically these have dimensions of territoriality and 'offensible space' (where surveillance and pursuit by police are difficult) (Atlas, 1991), similar to Western counterparts.
    Another aspect of culture relevant to the micro-level built environment is personal space. A review by Feghali (1997, p. 366) describes how '… Arabs as compared with Westerners demonstrate tolerance for crowding, pushing and close proximity in public places … privacy

is gained through psychological rather than physical separation from immediate surroundings'. A US guide for military personnel (Office of the Deputy Chief of Staff for Intelligence, 2006) puts it more starkly:

Most Arabs DO NOT share the American concept of 'personal space' in public situations, and in private meetings or conversations. It is considered OFFENSIVE TO STEP OR LEAN AWAY! Women are an exception to this rule. DO NOT stand close to, stare at, or touch a woman. (p. 14, emphasis in original)

The Muslim ban on alcohol of course removes one major criminogenic factor of inappropriate or violent behaviour; in built environment terms this has wider ramifications for interior and exterior planning and design of places of public resort, and town centres. More prosaic criminocclusive factors include the employment by many Emirati households and some Western professional ones of (often Filipino) domestic servants. These provide (along with any extended family in residence) an obvious source of guardianship in the home, of a kind rarely seen in contemporary Western dwellings. Here design-based crime prevention is less important although, as with prior Western experience servants, cleaners etc. pose 'insider theft' risks. The Islamic view of dogs as unclean may reduce their presence as deterrence to domestic burglars though the *Hadith* suggest dogs may be used for protection.[11]

Architecture and Planning

Little more than a fishing village in 1962 when oil exports began, today Abu Dhabi is a global city with sophisticated infrastructure and spectacular architecture, in which the planning authorities aim to incorporate Arab and wider Islamic features (e.g. arched windows, gates and decorative stucco). Abu Dhabi today has a sophisticated built environment and infrastructure and planning authorities aim to blend these with Arab and wider Islamic architecture (e.g. arched windows, gates and decorative stucco). Heritage is also preserved through renovation of forts, palaces, souks and mosques. Housing in Abu Dhabi is noted for its segregation by neighbourhood between nationals and immigrants; further divisions cover class, social power, ethnicity, and nationality.[12] South Asian male workers in particular live in barrack-type accommodation with guarded entrances; the impression is of an intention to keep the residents under control rather than, as with Western gated communities, to keep offenders out. There is some controversy about their living conditions and human rights more generally (Sönmez *et al*., 2011) which was beyond our academic and professional scope to address.
On the more local scale, an idealized description of traditional architectural and design features of residential areas is as follows.[13]

A *fareej* is a traditional neighbourhood system. Courtyard-style homes are built to the edge of the plot to maximize the use of land and define the public realm. Small paths, known as *sikkak*, strategically connect the homes to neighbouring homes, community facilities and intimate public spaces known as *barahaat*, as well as larger gathering spaces known as *meyadeen*. Together these form the *fareej*. In more detail, courtyard houses enable families to enjoy a private, outdoor area within their own home without being overlooked by adjacent plots or by passers-by. The courtyard house responds to the environmental challenges as well as traditional social requirements. Benefits include: privacy; optimum use

of land; separation of private family space from semi-private guest space; internal rooms look onto the courtyard; responsiveness to Abu Dhabi's climate; shade and protection from the elements; and flexible layout.

Sikkak (singular: *sikka*) are narrow streets or alleyways linking homes both to neighbours and to community facilities. Shaded by the buildings they run beside and between, *sikkak* provide cool, pedestrian-friendly, walkable routes, usable year-round.

Barahaat (singular: *baraha*) are spaces between homes that are located in a small number of key positions throughout the *fareej*. There are usually a small number of *barahaat* to create focal points for residents to come and interact with one another, ensure maximum use and provide a focus for a larger number of people. Each *baraha* is designed to meet the needs of the people and facilities close-by and provide a pleasant environment for residents. For example, *barahaat* near schools may contain a small playground for children and families, whereas *barahaat* near mosques may contain a public *majlis* or *berza* which are found outside mosques, for worshippers from the neighbourhood to meet and greet each other. Benefits include being small and friendly, shaded and cool, containing a safe, pleasant environment for residents, and reflecting nearby amenities and the residents they serve.

For the *wider community*, the *fareej* design makes walking throughout the neighbourhood much easier. However, roads are created around the edge and through main sections of the *fareej* to enable resident access and parking. Roads and *sikkak* can also be combined to create safe streets that enable vehicular access but are predominantly pedestrianized. Individual neighbourhoods are woven together through a mix of shops, schools, services, parks, public transit, mosques and workplaces. This combination serves a variety of community values including open space, community vitality, choice of housing, air quality and walkable, well-connected public transit.

Crime Context – Abu Dhabi

The US State Department (Bureau of Diplomatic Security, 2011) while noting that actual crime rates are hard to measure due to host government's policy of not releasing specific crime statistics, presents the following picture:

◆ Compared to similarly sized cities worldwide, Abu Dhabi's crime rate appears to be significantly lower. Crimes such as pickpocketing, petty theft, scams, assault, and sexual harassment do occur, although weapons are rarely used. It is believed that petty thefts occur often, especially within the large expatriate workforce which accounts for 80 per cent of the population. Reported crimes tend to be within the expatriate population, which is predominately Asian. Reporting indicates that most crimes take place in the work camps.

◆ The expatriate workforce consists predominantly of single men. There have been reported cases of sexual assault or harassment of women, including Americans. However, the UAE's Asian community is generally law-abiding and disinclined to commit criminal acts

that would risk arrest, deportation, and loss of employment. (Anecdotally we learned additionally that fear of deportation leads victims to under-report crime.)

◆ Crime rates can be expected to increase in step with the UAE's population surge.

News items from UAE more generally refer to increases in violent/disorderly youth crime (see note 11) and property crime, indicating under-reporting and complacency by householders and concerns with impact of increasing unemployment among Emiratis.[14]

Although we did not rigorously explore cross-cultural divergence in the *concept* of crime, during our visits and our perusal of academic and official literature we received no strong impression that this differed from Western interpretation. This is perhaps unsurprising because Abu Dhabi is secular in governance, with much administrative continuity with British Protectorate practice in the 'Trucial States' era (1820–1971); Sharia law is not imposed.

Individual crimes and the seriousness attached to them do of course differ but rarely dramatically. What is deemed inappropriate sexual behaviour is however far more inclusive than in Western countries; likewise violations of (especially) female privacy. These seemed, in conversations held with local stakeholders, to be something of a preoccupation of the same order as Western concern about rowdy youngsters. The impression was given that the bulk of offenders were 'sexually frustrated' migratory workers, but how far this was stereotyping was impossible to test. We were also told that women victims especially are reluctant to attend police stations due to potential stigma. To attempt to remedy under-reporting of crime/inappropriate behaviour more generally, Community Police aim to collect information less formally; but their success is unknown.

Point of Departure: What is the Most Suitable Articulation of CPTED for Transfer?

Our starting point for framing the production of the guidance was the identification and definition of key CPTED principles. But many variants exist, extending into the fields and terminologies of security and risk management – which were the most suitable for transfer?

The principles of CPTED have been presented (Poyner, 1983; Crowe, 2000; Cozens *et al.*, 2005), often re-presented and debated in diverse ways (Ekblom, 2011*b*; Armitage, 2013), with concern expressed regarding overlap, vagueness of expression and lack of clarity. Poyner (1983) outlined the principles as surveillance, movement control, activity support and motivational reinforcement. Cozens *et al.* (2005) extended this to include defensible space, access control, territoriality, surveillance, target hardening, image and activity support. We question how far defensible space and territoriality should be presented as separate principles, with one (defensible space) referring to a physical creation and the other (territoriality) describing the human response/emotion to that state. Nevertheless, these principles present a comprehensive (if perhaps too far-reaching) general-purpose description of the key elements of CPTED.

However, ours was a *particular* purpose – transfer into an explicit guidance manual for both planning and design in a specific country context. We therefore chose to adopt a modified version of CPTED principles: the *seven attributes of safer places* defined within *Safer Places* (ODPM and Home Office, 2004), the guidance for the consideration of crime prevention within the planning system in England and Wales. These attributes were

deliberately designed to be comprehensive, clear and consistent; they were embedded in a suite of guidance, recommendations, evidence and case study examples and oriented towards planning and architectural practice and thinking – just the kind of requirement we now addressed. Their acceptance by a widely constituted advisory team at the time, and their subsequent longevity in use, indicated some validity.

The seven attributes of safer places are: access and movement, surveillance, structure, ownership, physical protection, activity, and management and maintenance. These differ slightly from the principles in Cozens *et al.* (2005). *Safer Places* merges Cozens *et al.*'s two principles 'territoriality' and 'defensible space' to create 'ownership'. Cozens *et al.*'s 'access control' is extended to 'access and movement' – a term better encapsulating the issues around connectivity and through movement and their impact on crime as opposed to simply blocking or controlling access. *Safer Places* introduces the term 'structure' which is not presented by Cozens *et al.*, but refers to the wider spatial layout of an area including the connections to surrounding neighbourhoods. As opposed to 'target hardening', *Safer Places* uses the term 'physical protection', which perhaps better defines the use of design and layout to protect. Cozens *et al.*'s 'activity support' becomes 'activity' and 'image' becomes 'management and maintenance'. Although the specific recommendations are unlikely to differ, the term 'image' does imply a greater focus on the design and development of buildings and spaces which are free from litter, graffiti and vandalism but are also without stigma or poor reputation – a *state*. 'Management and maintenance' refers to an *activity* which would *create* that state and implies interventions post-design and development to maintain and manage buildings and space.

As will now be seen, our systematic review of international practice, and a growing appreciation of what was required in Abu Dhabi, led us to amend these seven attributes in turn.

Benchmarking: Review of International Practice

To inform the development of the guidance and ensure it was based on a clear understanding of local and regional issues and best practice globally, we undertook a benchmarking exercise. The plan was to identify and review local, regional and international safety and security decrees, regulations, standards and guidelines which consider safety and risk management, physical security measures and CPTED.

Pre-existing guidance relevant to the review was variously sourced. Documents pertinent to planning and development in Abu Dhabi (therefore to local guidance), such as the Abu Dhabi Development Code, and to the wider areas of the Emirate (regional guidance) were identified and obtained through key stakeholders. International guidance was retrieved through a comprehensive desk-based exercise: (*i*) using internet search engines; (*ii*) contacting key academics and professionals in the field; and (*iii*) making a 'call for information' to the members of three key designing out crime networks (namely, the UK Designing out Crime Association, the European Designing out Crime network, and the International CPTED Association). Overall, some fifty documents were identified, retrieved and included in the benchmarking exercise covering guidance from Abu Dhabi, Australia, Canada, Denmark, Egypt, Netherlands, Pakistan, Singapore, South Africa, Turkey, UK, USA and New Zealand.

The vast amount of material obtained from the international review made it imperative to assess each guidance document systematically. Thus, time was spent in designing a suitable spreadsheet-based data capture template to ensure that detailed information from each individual document could be recorded and retrieved. The spreadsheet was designed to capture general information relating to each individual document reviewed including: the document name; its year of publication; which country and/or state the guidance related to; and the type of document (for example, policy/guidance, award/incentive/scheme or academic paper).

The specific content of the document was then categorized by themes. These were loosely based on the seven attributes of *Safer Places*, adapted to ensure clarity and to reflect terminology and opinions of the key stakeholders. For example, the attribute 'management and maintenance' became 'management and maintenance/public image'. A further eight themes were identified either from the key stakeholder consultations as relevant to Abu Dhabi (e.g. Estidama or sustainability) or by ourselves as not fitting into prior categories. In some instances, a theme could have been encapsulated into an existing category. For example, references to 'lighting' could have been included in the theme 'surveillance'. However, because of the plethora of references to lighting, some of which was extremely detailed and could have been overlooked if included in a prior category, a decision was made to introduce 'lighting' as an additional theme.

The resulting fifteen themes used to categorize the data were: access and movement/connectivity; structure/spatial layout; surveillance; ownership/sense of place; physical protection; activity; management and maintenance/public image; counter-terrorism; landscaping and planting; lighting; utilities planning; Estidama (sustainability); embedding CPTED into the planning process; car parking; and reference to the importance of designing out crime.

To aid further analysis and to elicit what exactly the document was suggesting, encouraging or promoting about a particular theme, sub-themes were usually created. When reviewing a document which referred to 'access and movement', for example, it was important to ascertain whether the document was *encouraging* access and movement or *discouraging* it; or *stipulating* access control measures, e.g. to restrict unauthorized access into an apartment block. The content of each document was also reviewed against the environmental, demographic and cultural considerations of Abu Dhabi and the key principles of Abu Dhabi's Plan 2030, so any conflicts, gaps or further developments could be noted.

The majority of the documents reviewed were lengthy and very detailed. For example, several contained a plethora of standards and recommendations. Including these as single entries in the spreadsheet would have produced a complicated and inaccessible tool. To ensure content was not lost, we took as unit of analysis, one item of guidance/standard/policy within each document. Subsequently, almost 450 individual entries were captured from the fifty documents reviewed. Analysing each document in such a way has enabled the creation of an extremely comprehensive database encapsulating elements of good practice from a number of countries from around the world, to assist in the creation of a guidance document.

The database subsequently informed the drafting of the guidance, as intended. More broadly speaking our review revealed some alignment between international best practice and that previously acknowledged in Abu Dhabi. For example, the former suggests that

properties should have clear and strong boundaries, already common in Abu Dhabi because to the traditional Emirati building form and the concern with territory and privacy discussed above. However there are notable differences. The key themes where these appeared included: access and movement/connectivity; management and maintenance and public image; structure and spatial layout; and surveillance. Some of these differences, or conflicts, can be attributed to the climate in Abu Dhabi and its cultural factors. For example, international guidance recommends maximizing opportunities for surveillance. However, in Abu Dhabi there are typically low levels of natural surveillance owing to the traditional building form, cultural factors (promotion of privacy), and the climate (smaller windows to restrict levels of sunlight). The following section draws on these findings in detail.

Applying CPTED Principles to the Local Context

Below we attempt to illustrate some of the issues raised in applying CPTED principles to the Abu Dhabi context. For the sake of brevity we have been selective, highlighting those issues we judge to inform the wider purposes of this paper. As will be seen, insights from the benchmarking exercise, together with discussions with clients and the guidance-user community on the ground in Abu Dhabi, led us to slightly modify further the categories and labels so instead of seven attributes of safer places we now refer to the *eight CPTED transfer principles*. These were: *access and connectivity*; *structure and spatial layout*; *ownership*; *surveillance*; *activity*; *public image*; and *adaptability.*

Taking each, we present some examples of tensions which emerged relating to country, climate or culture of Abu Dhabi.

Access and Movement

One of the main tensions to arise when transferring CPTED principles to the Abu Dhabi context was the ability to limit access and movement throughout neighbourhoods which traditionally encourage pedestrian movement through the inclusion of *sikkak*. As defined above, a *sikka* is a pedestrian passageway between properties, common throughout the Emirate in both traditional and new neighbourhoods. *Sikkak* are designed, through their positioning and landscaping, to provide shade for pedestrians and, therefore, enhance walkability within and between neighbourhoods, even in the extreme heat of summer months. While *sikkak* have been deliberately included within neighbourhoods to replicate traditional form and for use as utility corridors, alleyways, not intentionally designed for aiding pedestrian movement, have been created through the desire for residents to own the four boundary walls of their property. These alleyways are merely a creation of unallocated, left-over land. They are not designed to connect neighbourhoods or to act as walkways. Consequently, their lack of function leaves them vulnerable to misuse (litter, graffiti, vandalism), and also as a means of gaining access and escape to surrounding properties. An example of an unused *sikka* is shown in figure 1.

Figure 1 . Example of an unused *sikka*.

Structure

Structure, or spatial layout (a preferred term in the Abu Dhabi consultation) incorporates much of what is dealt with under *access and movement* and also *ownership.* It refers to the wider layout of streets and space and how this can inhibit or facilitate criminal activity. One of the difficulties in transferring this CPTED principle is the need, due to local climate, to adapt the spatial layout to maximize shade and breeze (not often a problem in the UK). The orientation of buildings and position of pathways are therefore aligned in relation to sun and prevailing winds, with crime prevention typically accorded less priority than comfort – and nobody at any stage in the planning/design process was given the remit to try to maximize both simultaneously.

Ownership

While many cultural traditions within Abu Dhabi encourage a sense of ownership, several tensions emerged which make the transference of *ownership* principles difficult. One example identified as particularly problematic is the current rate of construction across Abu Dhabi which introduces two particular challenges for defining the ownership of space. The first is that, where land is being developed, particularly over a long period of time, it becomes difficult for those residing within an area to develop territorial responses to the areas surrounding their property. It becomes difficult for residents to establish which space belongs to whom, what constitutes private land and what is defined as public or private space. In any area undergoing construction, there will always be a problem in creating territorial responses while the area is under development, however where construction is

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taking place at the rate seen in Abu Dhabi, this lack of definition moves from a temporary risk to a permanent lack of ownership.

This is compounded by the presence of *construction workers* throughout an area of development, and where construction workers are migratory (working on short-term contracts) this creates an environment in which it is difficult for residents to know who is legitimately working on the site, and who is entering the space with criminal intent. Where an area is being developed, particularly at a staggered rate, there will be properties that are occupied but are surrounded by undeveloped land – land where ownership is unclear and where the presence of many different workers makes it difficult for residents to distinguish between those with a legitimate presence, and those who are potential offenders. This tension relates to the current state of the country, which is likely to persist for at least a decade. It is an issue which would be difficult to avoid; one moreover where planning and built-environment design solutions are of limited help, though wireless ICT systems might be developed to supplement security guards in monitoring who is where on-site and with what right of access.

A further complicating cultural/country issue is the Emirati tradition of 'gifting' plots, which may then remain undeveloped for years or even decades. If we consider development within a country such as England, the common order of events would be for a plot to receive outline planning permission for development, with conditions on the type and number of buildings. That land would be bought by a developer who would build the permitted number of properties and either sell them in phases (for a larger development) or begin sales once the development was complete (for smaller plots). Whichever scenario, the timescale from the purchase of land to the completion of development and sales would be approximately one to two years. Where plots of land are gifted, development would take place at a slower and much more staggered rate, with the possibility that a large villa could be surrounded by empty plots for many years. Figure 2 illustrates an example of land which has been gifted and has not yet been built on, a very common sight in newer suburban neighbourhoods. This, consequently, creates a lack of ownership and of clarity as to who should or should not be within the area. Solutions would seem to centre on changes in administrative practice, though that might not be straightforward.

Figure 2 Example of a plot which has been 'gifted' and has not yet been developed.
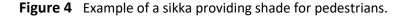
Surveillance

The desire to maximize surveillance raised concerns relating to both climate and cultural sensitivities. Within Abu Dhabi, the cultural importance of privacy means that, very often, boundary walls are high and blank with the desired effect of restricting surveillance into the property, but consequently limiting the extent to which residents can act as crime preventers overlooking the area surrounding their property. Perimeter walls are designed to define a property's boundaries and to improve the privacy for residents by preventing inward observation from the street. This same restriction makes the implementation of this CPTED principle difficult and a balance must be struck between the desire for privacy and the crime prevention benefits of surveillance. Figure 3 is an example of a development with blank boundary walls. This, coupled with the dwelling's blank gable ends, limits levels of surveillance. How surveillance might be increased without adversely affecting privacy is a design challenge which might be achievable through reflective glazing or CCTV technology, but neither solution seems ideal or aesthetically appropriate. Speculating, it might prove possible to draw on traditional features such as Islamic-style screens called *mashrabiya* (decorative lattices perforated with small holes)[15] to favour surveillance out of compounds over spying in.

Figure 3 Boundary walls restrict levels of surveillance.

The second limitation regarding surveillance relates to the requirement for shade, particularly within the traditional walkways (*sikkak*) which connect residential developments throughout old and newer neighbourhoods. Although *sikkak* enhance connectivity between neighbourhoods, the Abu Dhabi climate means that, unless such pathways are shaded, residents are unlikely to choose to walk. For this reason, many of *sikkak* had been designed

with large trees overhanging the pathways to maximize shade. While this provides shade, it very often completely restricts visibility and surveillance both along the pathway, and from properties which bound it. An example of a *sikka* which provides shade for pedestrians is shown in figure 4. The solution here might simply centre on highlighting the need for designers to consider the dual requirements of shade and surveillance simultaneously.

Figure 4 Example of a sikka providing shade for pedestrians.

Activity

This CPTED principle relates to the benefits of encouraging activity throughout the day and evening to provide informal surveillance and 'eyes on the street'. In the context of Abu Dhabi, the heat restricts the number of pedestrians during the day leaving many public spaces deserted. This raises crime prevention concerns during the day which perhaps only greater investment in public shading and breeze channelling could address. However, the heat has a positive effect of encouraging people of all ages to populate public spaces throughout the cooler evenings – thus providing informal surveillance at a time when in many Western temperate climes the evening streets are surrendered to the young.

   The issue of gifted plots also limits activity in areas where land is undeveloped. This can create an environment in which single properties are surrounded by empty plots, with developments lacking the communal facilities to encourage pedestrian activity. Again, this is a difficult problem to resolve given the cultural practice of gifting plots, which may remain undeveloped for decades as shown in figure 2.

Management and Maintenance

Several issues emerged relating to the ability to manage and maintain public/semi-public space. The first is that Abu Dhabi does not have a to-the-door postal delivery service, post being collected by residents. Thus properties lack letterboxes: marketing material is therefore often left tucked in the front gates (see figure 5), flagging the absence of occupants. Design solutions are obvious but implementation might be tricky – indeed when the postal service was introduced in the UK there was considerable resistance to spoiling

front doors by cutting slots in them as the Post Office sought to encourage on grounds of efficient delivery.

Figure 5 Post left in the front gates of properties.

As was highlighted under *access and movement,* the cultural importance of owning four boundary walls and the status associated with this (as opposed to sharing with a neighbour) has created areas of unused, unmanaged public space (*sikkak*) which are not large enough to act as pathways, nor to be used for public, legitimate activities. While these areas should be maintained by the local municipalities, evidence suggests that they are often left unmanaged with an abundance of litter and left over building materials, which in some cases could be used to aid access over the private boundary walls (see figure 6).

Figure 6 An example of unmanaged public space.

Physical Protection

The physical protection of properties through target-hardening measures raised very few tensions or conflicts. The cultural desire for privacy, reflected in high boundary walls, naturally enhances physical security; however, this risks the over-fortification of developments which may not be at risk of crime. Examples of this included excessively high, blank boundary walls which are vulnerable to vandalism and graffiti and also risk enhancing fear of crime (see figure 7). Rather than encouraging physical security, the challenge in Abu Dhabi was to ensure that protection was commensurate with risk, and that security did not undermine design quality.

Specific concerns relating to the climate included the need to ensure that materials used for target hardening are resistant to dust and extreme heat. For this reason, the technical standards of security equipment would need to be adapted to account for this risk. In other contexts, different kinds of climatic adaptations of buildings such as fly screens (e.g. in Australia), or winter shutters (e.g. in Scandinavia) have crime implications.

Figure 7   Example of a compound wall which offers protection for the home, but may be vulnerable to graffiti and vandalism.

Social Cohesion and Collective Efficacy

Although beyond the remit of the current project, cohesion is an important cultural and country issue for transferring CPTED or collective security practices such as Neighbourhood Watch to Middle Eastern contexts. The diverse groups that make up Abu Dhabi society currently interact in quite circumscribed ways. At one extreme they are kept at some distance by patterns of residence, citizenship status, employment, class and religion. The all-male migratory worker accommodation may likewise hinder mutual support within that group. At the other extreme, the tendency, where it occurs, for extended Emirati family groups to live in close proximity (if not under the same roof) makes for very cohesive households and immediate neighbourhoods. Here, residents could be expected to show heightened collective efficacy or social capital (Putman, 1995) in checking out strangers, controlling wayward youngsters and so forth. Future developments deliberately or

incidentally serving to increase mobility and mixing of populations at places of work, leisure or residence may give rise to tensions, alleviation of which may need to draw on the insights of 'second generation CPTED' and, more broadly, explicitly address social cohesion strategies. South African experience in reconnecting separated communities may help here (e.g. Kruger, 2005).

The Technicalities of Knowledge Transfer

The practical task of ensuring CPTED knowledge was suitably organized to facilitate transfer to the Abu Dhabi context was not insignificant. As described above, the knowledge that existed in the guidebooks, research studies and regulations of diverse Western nations had to be obtained, filtered for relevance to climate, culture and country on several dimensions, broken down into functional units and ordered under categories which made for consistent interpretation and ready retrieval. Effort was also needed to arrive at a consistent suite of clearly articulated CPTED concepts and terms to aid transfer. In fact, we attempted to develop an explicit specification for how to make consistent guidance statements for individual items of advice, for themes and for principles.

First, it was decided that terms should be clear, consistent and translatable unambiguously into Arabic, with such translation happening at an early stage to avoid proliferation of misunderstanding and wasted effort as the project unfolded. Any references to crimes were to be identical to the terminology used by the Abu Dhabi Judicial system.

Second, statements should: be accompanied by graphic visualization; be positive, active, imperative, second-person ('you should do x') even though such directness was not always culturally familiar to the audience; contain simple elements; be realizable in practice and measurable; allow sufficient design freedom and customization to context, referring to intelligent application and combination of principles rather than promoting cookbook replication; avoid 'on the one hand, on the other' hedging but do not duck explicit statements of design contradictions. Clearly expressed, in fact the latter facilitate and stimulate the designer's task. One approach here could be to develop the 'ideal final result' concept from TRIZ, the theory of inventive principles (e.g. Ekblom, 2012*a*). This could be combined with the 'mechanism with purpose' (how it works and why) approach from the Security Function Framework (Ekblom, 2012*b*) to make statements of this kind:

◆ Encourage shading to make walking/cycling more comfortable, but do not compromise safety by obstructing surveillance or providing hiding places.

◆ Consider, where safe and otherwise appropriate, strategies for legitimate temporary use of undeveloped plots, such as play space, commercial uses, car parking or informal gardens.

◆ Find ways in advance to hold owners responsible for maintaining plots and their content to an acceptable standard; this should cover both vacant plots and those in use (e.g. ensuring planters contain live landscaping and are regularly cleaned of litter and debris).

◆ Encourage and/or formalize control of some external space by householders, e.g. through planting or installation of seating.

Terms like 'appropriate', 'private' or 'the right use in the right place' can be used to support universality provided developers are explicitly guided to interpret them in the locally accepted sense. In Abu Dhabi, of course, inappropriate means antisocial or sexually offensive behaviour.

Conclusions

We can draw lessons from this exercise at several levels.

In terms of *knowledge management*, getting diverse and messy CPTED restatements into shape for transfer reflects badly on the *status quo* of the organization of knowledge in Western contexts but if these lessons are learned it should reflect *back* with benefit onto usage in the countries of origin.

A similar benchmarking process to that developed for this project could be undertaken in transferring practice knowledge to cultures, countries and climates other than Abu Dhabi. Necessarily the process will have a different outcome for each destination.

On the *content of CPTED knowledge*, the fact that only relatively minor conceptual modifications were needed to the seven attributes of safer places, following a comprehensive and detailed international review and discussions with client and user groups in Abu Dhabi, could be taken at face value to indicate the fundamental validity, utility and transferability of the principles. There was little evidence that stakeholders in Abu Dhabi understood the concepts of crime and crime prevention any differently from Western practitioners and policy-makers, though there were differences in emphasis and detail in the governance and practical implementation contexts.

However, what was considered criminal, and how serious, did differ particularly sexual behaviour of all groups and consumption of alcohol by Emiratis. And from a practical perspective the lack of availability to the planning and design professionals of detailed local crime statistics and crime reports, reminiscent of Western societies some 40 years ago, continues to limit the ability to target and prioritize preventive action of whatever kind. (We noted that the term 'intelligence', covering information collected and organized with the purpose of guiding decisions (Ratcliffe, 2008; Ekblom, 2011*a*), was unfamiliar to Abu Dhabi colleagues.) It also denies designers the type of rich user- and abuser-centred behavioural knowledge (for example, on careless crime prevention practices or on perpetrator techniques) that informs their approach to the problem and enables them, where appropriate, to reframe the original questions put to them by clients (Lulham *et al.*, 2012). All this is important, especially in a context of continual change.

At the most general level we can perhaps say that, on the basis of the current project and the research that went into it, while transferring CPTED requires significant cultural, country and climatic adaptations, the main concepts, the broad principles and the processes seem to be intact and universal. In many ways the same or similar tradeoffs and conflicts exist within CPTED and between CPTED and societal values other than safety and security, but there are locally different balance points and resolutions to be had. Essentially this is the same message, writ somewhat larger, of *Safer Places* (for example, see Ekblom, 2004).

Why might this be? Human universals undoubtedly exist relating to space and the built environment, comprising some blend of the tactical/logistical realities of life (e.g. opportunities for and constraints on territorial ownership, defence and surveillance), and

human adaptations to these realities (whether these are evolutionary psychological, cultural or, most likely, some blend).

But more sceptical interpretations are possible. For one thing, Abu Dhabi is actually fairly Westernized despite its significant Middle Eastern culture, country and climate. For another, we as a team may have been insufficiently sensitive to subtle but important differences in the limited experience we had of the Abu Dhabi context – differences which a social or cultural anthropologist might have picked up on. So the ultimate tests on transferability of CPTED would be (*i*) how well the guidance based on these principles performs and is applied over the following decades and (*ii*) whether the principles still stand up in more radically-different contexts e.g. urbanizing or even rural Africa. In both cases we will have to wait to know, but starting now is advised.

Rather than just an interesting academic byline, surfacing the context of CPTED became an integral part of the Abu Dhabi project itself. In having sought to document some of these contextual factors and their significance we hope to inaugurate a rich but discerning two-way traffic based on a wider and deeper understanding of context. Abu Dhabi and other non-Western countries should benefit from the long experience of CPTED research and practice imported from Western settings; but they should do so in a careful way that is appropriate to climate, culture and country. Not least, the knowledge and professional practice imported should be state-of-the-art and avoid past mistakes.

Western researchers and practitioners can in turn get that fix on their own, otherwise submerged context, and may, equally carefully, tap into some novel and valuable practices developed in the Middle East. Who knows, for temperate Western countries, there may be lessons to import for the warmer climate ahead. And Eastern and Middle Eastern communities living within those countries may be able to benefit from culturally appropriate architectural features beyond the importation of individual building designs and features like mosques and minarets.

Finally, we wish to lament the dearth of international and comparative research in CPTED. Increasing such studies would enable the transfer of knowledge to be better and even more context sensitive. Organizations such as UN Habitat might wish to take note.

NOTES

1. A comprehensive picture of the immediate causes of criminal events, and counterpart preventive interventions, the Conjunction of Criminal Opportunity, is in *Safer Places* (ODPM and Home Office, 2004) and Ekblom (2011*a*).
2. See http://www.designcouncil.org.uk/designprocess.
3. Respectively Scanning, Analysis, Response, Assessment – see www.popcenter.org; and Intelligence, Intervention, Implementation, Involvement and Impact – see Ekblom (2011*a*) and http://5isframework.wordpress.com.
4. A limited exception is Zahm's (2007) SARA-based analysis guide for CPTED practitioners.
5. Thanks to Rob Mawby for exhuming this in a 2005 conference presentation.
6. See http://gsec.abudhabi.ae/Sites/GSEC/Navigation/EN/publications,did=90378.html.
7. See http://estidama.org/?lang=en-US.
8. The project was managed by Llewelyn Davies Yeang, an international architectural consultancy, and led by Ben Castell of URS; the other authors were engaged as consultants working both in UK and on visits to Abu Dhabi.
9. www.everyculture.com/To-Z/United-Arab-Emirates.html.
10. E.g. http://www.thenational.ae/news/uae-news/courts/dubai-police-take-on-the-summer-surge-in-youth-crime-and-blade-battles ; http://www.thenational.ae/news/uae-news/dubais-motorcycle-gangs-shatter-

ramadan-calm; http://www.thenational.ae/news/uae-news/locals-say-gang-violence-is-worse-than-authorities-realise.

11. See
http://www.searchtruth.com/searchHadith.php?keyword=Dog&book=&translator=1&search=1&search_wordj=&start=10&records_display=10.

12. This description based on www.everyculture.com/To-Z/United-Arab-Emirates.html Accessed 21 September 2012.

13. Condensed from www.upc.gov.ae/guidelines/neighbourhood-planning.aspx?lang=en-US.

14. For example, see http://www.thenational.ae/news/uae-news/courts/complacency-becomes-criminals-best-weapon-in-uae#full.

15. Search Google images for *mashrabiya* and Islamic screens, and marvel.

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