Developing & Maintaining Sustainable Communities: Managing the output focus of Crime Prevention through Environmental Design (CPTED).

Crime Prevention through Environmental Design (CPTED) is long established and used in many parts of the world today. Over time underlying themes, definitions and successful communication of concepts has suffered significant decay and interference, evidenced through 2 years of research and reported on at last year's CUF conference. By 2013 we had comprehensively identified and ranked problem areas of CPTED and the extent of this decay, leading to development of a new, deeper and more integrated utilisation framework clarifying definitions, maintaining theory driven concepts and assisting communication. Research continues to refine, test and develop that framework through successful collaboration with a developer in Trinidad, final results from which we hope to report on at next year's CUF conference. Further work has explored the parameters of developing sustainable communities during which we sought to identify, through in depth research, just what issues need consideration and collation when creating or maintaining a sustainable community and how, if at all, CPTED would fit within that theme. Seeking a preferred model for the provision of contextual information to inform the integration of CPTED we establish sustainable community development as providing clear and informed parameters clearly linking with CPTED and therefore within which 'context' can be set, so reducing the risk of unnecessary complexity, diversity and irrelevance within the provision of contextual information to the urban professional. This paper relays our research outcomes and emphasis, highlighting how CPTED can contribute to the development of wider planning goals considering the development and maintenance of sustainable communities. Understanding and managing this potentially new direction enables clear links with development and maintenance of sustainable communities through urban planning to be profitable and impactful.

Conference Sub Themes:

Building Strong and Resilient Communities

Involving Communities

Emerging Tools in Participatory Planning

Local Economic Development for the Caribbean

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Introduction

Environmental theories and explanations of crime create a backbone for the development of the concept that the built environment in which we operate (victims of crime and offenders alike) can influence human activity, and so act to prevent those activities deemed to be deviant in nature. Designing 'out' crime through urban development planning of the environment, labelled Crime Prevention Through Environmental Design (CPTED) has become a familiar field in contemporary crime prevention, particularly evidenced in English speaking and Northern European countries, and is based upon the straightforward belief that crime results, at least in part, from the opportunities presented to a motivated individual through the physical environment in which they operate. It is therefore considered that re-designing such environments with an awareness of the abilities of CPTED should lead to criminality being somewhat reduced and a safer environment for human activity.

Through examination of some 40 years of research, knowledge development and professional activity our research established that definitions of CPTED are significantly variable but at the heart of the overall CPTED concept is its ability to *reduce opportunities for crime* through effective *planning and design* to produce a *built environment* that provides and encourages *empowerment to legitimate* users and the *marginalisation of the illegitimate.* Therefore CPTED is not to be done by the individual, nor is it a 'bolt on' accessory to the built environment to be considered only as an afterthought and with hindsight. Instead it is a necessary part of the overarching process of urban design, and it naturally follows that the integration of CPTED principles requires understanding and co-operation between the diverse actors involved in that process. However the constitution of that partnership of diverse actors is complex and often in debate as preventing crime in the environment is a recognised pre-requisite of creating sustainable urban living and working environments together with sustainable communities (Johnson, Gibson & McCabe, 2014). History confirms that we have been (trying) to do this for millennia with Iron Age forts and medieval walled towns; settlement design has always tended towards supplying safety and security for occupants and legitimate visitors (Cozens 2007). If consideration of crime and victimisation is important for creating sustainable environments, and the argument is well made that it is (see Cozens 2007, Cozens 2008, Larimian et al 2013, Marzbali et al 2011, Gamman & Thorpe and others), then the geography of crime and behavioural geography have an important role to play within urban development. Additionally concepts of crime prevention through environmental design and developing sustainable communities have very clear and obvious overlapping missions which can both be generalised as concepts ultimately seeking safety for legitimate users, whether within the built or social environment.

Contemporary CPTED development

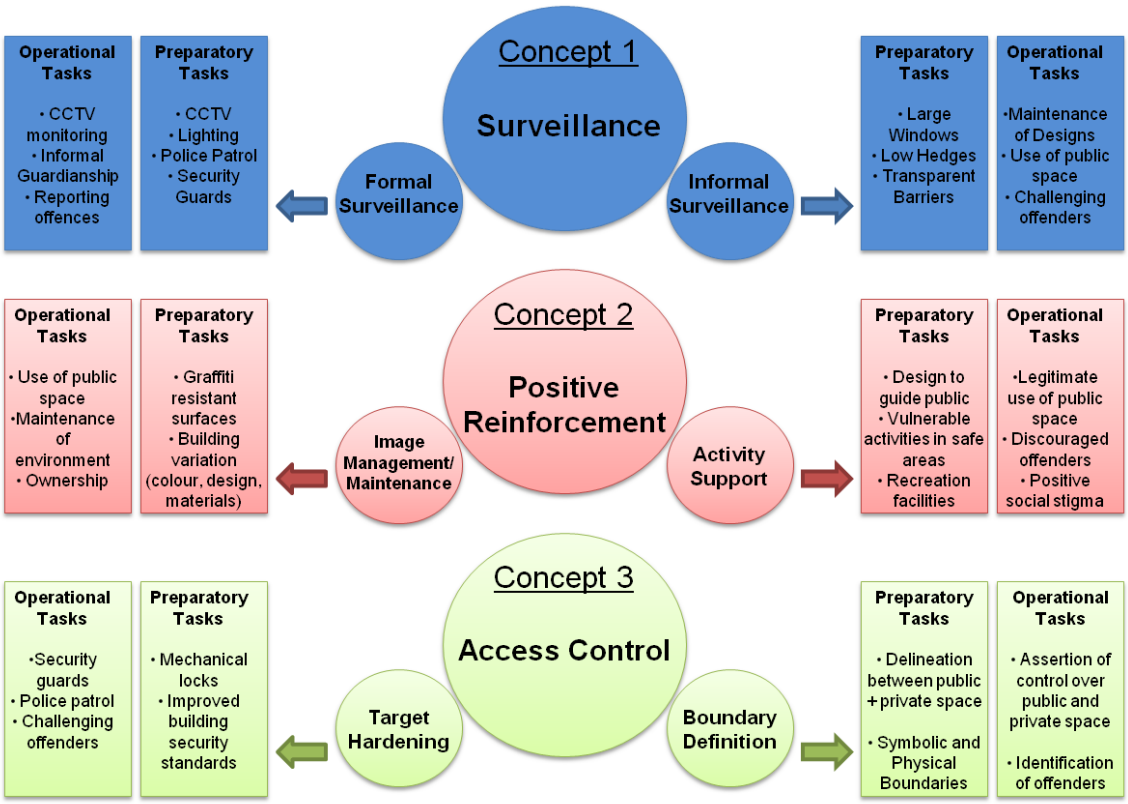
Research presented at the 2013 CUF conference in Trinidad originated from a need to establish an applicable and current CPTED framework in order to identify a benchmark from which further work could be aligned. That research utilised a wide ranging, deep and purposefully systematic search of historic and contemporary CPTED related published work, followed by a similarly systematic and carefully orchestrated textual analysis of documentation recovered. This high integrity knowledge exploration revealed an apparent lack of academically focused CPTED frameworks, creating a potential knowledge gap between academia and professionals. Those which had been iterated were at times confusing and at odds with each other, using a myriad of terms to describe and delineate similar features. As a result we presented last year a contemporary, viable and improved CPTED framework designed to serve as a supporting and guiding mechanism to the achievement of crime prevention through the design of the environment. It offers the academic and the professional alike understanding of the system of CPTED and describes in detail, their interrelatedness.

As with the literature examined for CPTED frameworks very significant diversity was found in professional practice which provided a very mixed and sometimes lacking crime prevention approach to designing the built environment. Not seeking a critical outlook of professional practice in this aspect and fully acknowledging that only a 'snapshot' of professional practice was viewed as opposed to a

truly representative sample we found evidence of the potential risk posed to the accomplishment of a holistic crime prevention strategy in urban design resulting, at least in part, from the lack of a suitably defined and communicated CPTED framework.

However there is a demonstrable paucity of studies that have attempted to develop a holistic CPTED framework. Examples of the few date from Westinghouse 1977 demonstrations (See Bickman et al 1978 & Kaplan et al 1978), Crowe (2000) and Ekblom (2009), but these evidence the lack of structured development in the first few decades of exploration and operationalisation as they have limited redress to an accepted framework and strategy design known and used today. For this purpose a framework can be seen as *a set of concepts organised to facilitate the understanding and operationalisation of a complex overlapped crime prevention approach*. It aims to set out the component parts of the approach in a suitable format leading to the understanding of the relationships and drivers behind them. Without such an established, evidence based and clearly understood framework it becomes almost inevitable that diversity in approaches will follow, leading to the significant risk of losing sight of the core CPTED precepts and weak prevention focused design.

Figure 1. Proposed CPTED Framework.



The research phase briefly described here found academia to be lacking in provision of a rounded CPTED framework that could be disseminated for academic research, understanding and knowledge base for professional practice. In two distinct phases we examined first academic knowledge and second the knowledge base drawn upon by professionals in the field. In both areas of application a holistic, universal and clear framework for the overall concept of the ability to prevent crime through the design of the built environment was not apparent.

We suggest that whilst this proposed framework has condensed in format, it represents a clearer less entangled structure. The framework is structurally supported by theories with territoriality being repositioned as an overall mechanism which must be achieved to ensure effective crime prevention as a universal goal for CPTED. It follows that the number of preparatory and operational tasks under each concept could be potentially infinite as there are for instance many ways to prepare the environment for surveillance or access control, thus defining this as a flexible framework that can be integrated into practice (Gibson & Johnson, 2013).

Framework advancement: CPTED -vs- Sustainable Development

Since the last CUF conference our research has diversified by continuing to examine the global knowledge base, identifying and seeking to fill potential knowledge gaps which may currently restrict the application of CPTED, improve the frameworks development, forge strong links with professional practice and enhance the academic and practitioner nexus.

To date we have seen that CPTED has focused on design with little systematic holistically considered and globally accepted recourse to considering the users of the environment to be designed. This has led to criticism that CPTED takes a 'top down' approach to crime prevention, presenting issues with its value as a preventative process. If we are to develop a truly holistic framework for CPTED then it follows that we must seek to counter and respond to the criticisms that have been levelled through academic work over the last 40 years.

To do so CPTED must be utilised contextually by providing context of the environment in which it is to be considered or introduced. Such a statement in itself raises fundamental questions yet it is in turn a fundamental statement, CPTED needs to 'fit' into the urban landscape (in its widest sense) but those landscapes change and evolve in response to the human use of space so therefore we must understand the 'context' of the place in question and its environs in order to provide a crime prevention technique that will be accurate, positive, appealing and interactive.

Seeking a preferred model for the provision of contextual information to inform the integration of CPTED through the design process becomes of paramount importance if further confused, entangled and poorly structured methods are to be avoided, issues that have arisen over time to the detriment of CPTED framework development. However to consider the matter of context as an individualistic statement is unrealistic. The word 'context' is defined in dictionaries but to delve in to its meaning and relevance without setting boundaries for that exploration is unrealistic and likely to lead to irrelevance and unnecessary complexity. Methodological boundaries to the exploration of meaning and relevance therefore sets the problem of deciding exploratory parameters; deciding on an appropriate theme in which to fully understand the concept of 'context', what it means, what it conveys and what it requires.

Crime prevention is a sustainability creating activity in terms of communities. It can create safer, pleasant, risk reduced places to work, live and be entertained in, a required constituent of generating a sustainable community. The level of crime prevention activity required to do that will depend upon numerous factors but there are likely to be some activities within every community, even if they are individual activities such as householders in a street fixing alarms to their own properties. The ability and provision of services to provide and fix the alarms reduces risk, increases safety, creates or maintains an economy and, in short, means that residents will remain in the community because they feel safe there. Of note is a parallel impact on the fear of being victimised rather than a focus on the amount of crime actually being committed, but we know that the two are inherently linked. We also know from past research that CPTED can have significant positive effects on people’s fear of crime.

Links between CPTED and development of sustainable communities through creation of safer, risk reduced and attractive community environments has long been recognised but little work undertaken to delve into those links.

Development of Sustainable Communities is therefore a suitable reference framework in which to

explore the ‘context’ of an environment for CPTED. It was found that the concepts and theories discussed within the sustainable community development arena provide clear and informed parameters, linking with CPTED and therefore within which ‘context’ can be set, so reducing the risk of unnecessary complexity, over-diversity and irrelevance within the provision of contextual information to the urban professional.

Having set parameters through substantial knowledge research an overall research question was developed:

“What does the *context* of crime prevention through environmental design *within the parameters of sustainable communities* look like?”

Unfortunately our research into this aspect is too voluminous to report on via this conference paper in any form of detailed manner and can only be summarised, the subject of sustainability itself being a significantly diverse mix of multi-disciplinary views, interest and knowledge creation.

In order to develop knowledge a systematic, expansive and inclusive literature search and review was undertaken, with initial systematic and repeatable searches revealing in excess of 2000 texts. Discovered texts were further categorised through an inclusion/exclusion criteria process, narrowing down the body of literature to maintain relevance via a carefully considered, fully repeatable yet flexible process to understand what factors are considered to create and maintain sustainable communities, and subsequently links with developing a required contextual statement for a built environment utilising a CPTED approach. Qualitative content analysis of included texts followed, the goal being to identify and categorise all aspects of sustainable communities and their development factors.

Drifts in meaning and emphasis have fuelled the ‘sustainability’ debate over time, namely over what the term encompasses. Although it was conceptually defined by the Brundtland commission in the 1980’s, sustainability exhibits many different dimensions including ecology, society, economy and technology among others. Sustainability concepts force the clarification, revision and expansion of the textbook wisdom of the pre-Brundtland era (Howarth, 1997) with a general contemporary consensus that there are three main modes of capital which need to be preserved; economic (man-made capital), social (human/social capital) and environmental or natural capital (Bonevac, 2010), and that all three factors must be balanced in order to reveal true sustainability.

Sustainable practices should be the unifying principle for improving quality of life and opportunity within communities. It integrates traditional economic development and social well-being with environmental protection and restoration, and it makes particular sense at the community level because the relationships amongst these objectives are most obvious there (Dernbach and Bernstein, 2003). The built environment appears to have only a moderate role in a country’s sustainable community’s agenda (Gomes, 2008), yet has the potential to bring non-monetary benefits to a community such as a sense of ownership and usually much needed infrastructure. It remains that CPTED has very clear links with many of the identified requirements of developing and maintaining sustainable communities and that the sustainability concept is a valid and important context provider for understanding the added value that utilising CPTED in designing the built environment may present.

Research has allowed detailed consideration of sustainable community factors, seeking identities of those that are linked with crime prevention and CPTED either directly or indirectly. Figure 2 below expresses those factors and the manner in which they are hierarchically linked and structured, from which certain ‘common sense’ CPTED links, such as creating a well designed community can be delineated, together with the not so obvious such as community mobilisation.

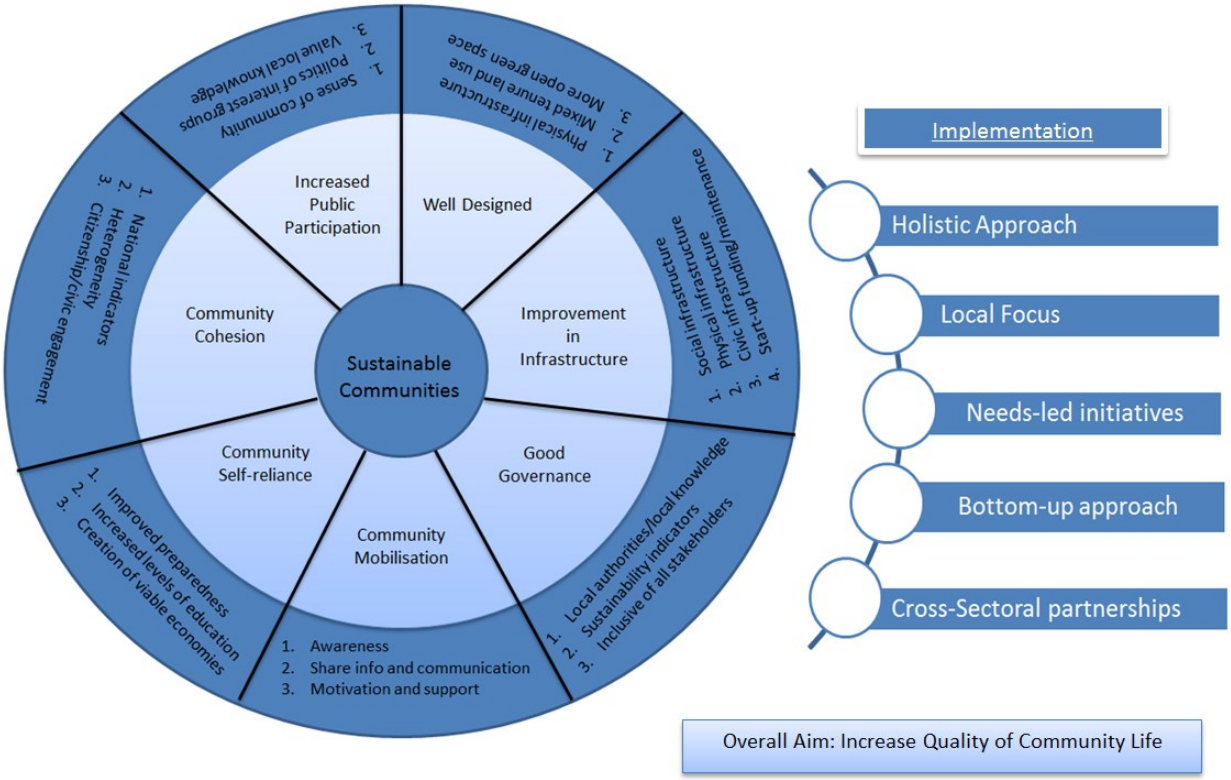


Figure 2.

An overall conceptual map for developing sustainable communities was drawn from the extensive material reviewed and it becomes visually apparent that sustainability is a complex process. The initial themed literature review undertaken before the creation of the concept map produced the following potential features of a sustainable community:

- Quality of community life
- Community mobilisation
- Improvement in infrastructure
- Community wide/increased participation
- Community cohesion
- Community self-reliance
- Well-designed/more open and greener public space
- Good governance/policy use
- Improve wellbeing (social, environmental and economic)
- Active, inclusive and safe with greater trust and security
- Mutual community responsibility
- Bottom up approach
- Needs-led/Local focus
- Holistic approach
- Mixed tenure land use

Whilst some were very specific e.g. mixed tenure land-use, it remained that many were simply too broad for practical application e.g. quality of life or improvement in infrastructure. Due to the variety of scale amongst the features it was also considered that some of the more specific formed sub-components of those that are much broader.

Further textual analysis via a qualitative coding mechanism and systematic categorisation made it clear that good governance becomes an overarching requirement condition but that Quality of Life is seen as the ultimate objective that all other features work together to achieve. For urban planners and designers, police and policy makers and a growing number of citizens, the concept of 'quality of life' has become increasingly important as a defining measure of the health of cities and the societies of which they are a part (Schneider and Kitchen, 2002, pp. 3). Quality of life incorporates the environment, social and economic considerations and serves as the overall aim for a sustainable community. This is based on the assumption that if all the other criteria of a sustainable community are met, there will be an increase in the quality of life. Similarly, the overall objective of a sustainable community is to make it a place where individuals want to live and work, thus the quality of life must be improved. It also serves as a requirement for some of the other features in order to achieve them e.g. community self-reliance.

Social indicators have become a widely used tool to measure the status of the quality of life and progress being made toward improvement. Indicators should be used as a vehicle to understand and address community issues from a holistic and outcomes orientated perspective (Swain and Hollar, 2007, pp. 1). Most communities are defined and evaluated in terms of average income, the number of new jobs created and new housing starts – economic indices - but alone these measures say little about how these changing economic, social and environmental trends are impacting the landscape, faces and values within a community (Besleme et al, 1999, pp. 3).

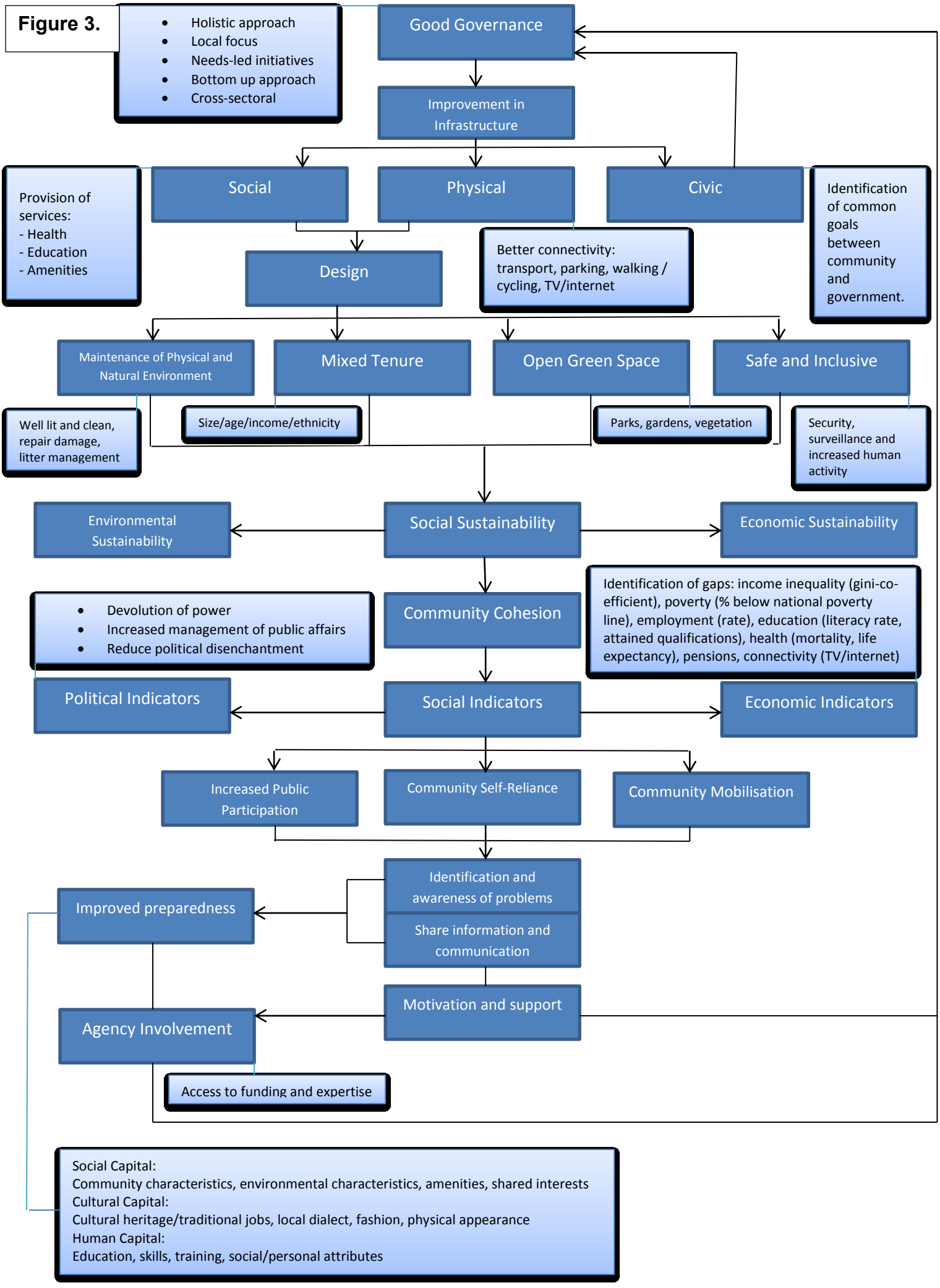
A strong point of social indicators is that by including measures across various life domains, they are able to capture important aspects of society that are not sufficiently reflected in purely economic yardsticks (Diener and Suh, 1997, pp. 194). The idea of social indicators rests on the assumption that there is widespread agreement in a community about what factors are most desirable, a presumption that is often problematic in complex and heterogeneous societies. The criteria for the selection of social indicators to complement economic indices findings includes the following: importance, policy relevance, responsiveness, validity, understandability, clarity, outcome orientation, asset orientation, anticipation, availability (timeliness, stability and reliability) and representativeness (Swain and Hollar, 2007, pp. 3).

Subsequently issues arise in the weighting of some social indicators against others. The quality of life of cities may be judged to be totally different depending on the selection and weighting of measures, a procedure for resolving how to weight the indicators is lacking (Diener and Suh, 1997,pp. 197). When this issue is resolved the specificity of location and choices of the community make these indicators a very effective measure.

Quality of Life therefore is an important but highly complex factor to consider, measure and action but within the limitations of this paper is discussed above to provide an example of how considering Quality of Life within the contextual knowledge gathering for CPTED would be a valuable undertaking. Further exploration was made of all other identified features, leading to the structured concept map as a model of social sustainability displayed in figure 3.

An overriding condition becomes clear, namely that providing CPTED context within sustainable community concepts will require careful collation and analysis of many social indicators which must be carefully aligned and considered in order to provide integrity to the contextual knowledge and potential impact assessment of CPTED.

Figure 3.


Holistic approach
Local focus
Needs-led initiatives
Bottom up approach
Cross-sectoral
Good Governance
Improvement in Infrastructure
Social
Physical
Civic
Provision of services:
- Health
- Education
- Amenities
Identification of common goals between community and government.
Design
Better connectivity: transport, parking, walking / cycling, TV/internet
Maintenance of Physical and Natural Environment
Mixed Tenure
Open Green Space
Safe and Inclusive
Well lit and clean, repair damage, litter management
Size/age/income/ethnicity
Parks, gardens, vegetation
Security, surveillance and increased human activity
Environmental Sustainability
Social Sustainability
Economic Sustainability
Devolution of power
Increased management of public affairs
Reduce political disenchantment
Community Cohesion
Identification of gaps: income inequality (gini-co-efficient), poverty (% below national poverty line), employment (rate), education (literacy rate, attained qualifications), health (mortality, life expectancy), pensions, connectivity (TV/internet)
Political Indicators
Social Indicators
Economic Indicators
Increased Public Participation
Community Self-Reliance
Community Mobilisation
Identification and awareness of problems
Share information and communication
Improved preparedness
Motivation and support
Agency Involvement
Access to funding and expertise
Social Capital:
Community characteristics, environmental characteristics, amenities, shared interests
Cultural Capital:
Cultural heritage/traditional jobs, local dialect, fashion, physical appearance
Human Capital:
Education, skills, training, social/personal attributes

Research Outcomes and Discussion

Encompassing 2 years of transparent yet complex and diverse research we identify and rank issues manifest in the application of crime prevention through environmental design on an evidential footing driven by systematic research methodologies. Highest ranking and most impactful of current criticisms was the poor and diverse terminology in use, both across academia and professional practice, which has the potential to lead to failure risk in the utilisation of CPTED as no clear, generic and therefore transferable theory driven framework of operationalisation was apparent.

In order to mediate such risk and improve depth of knowledge and understanding of CPTED a new framework has been developed and was presented at CUF2013 in Trinidad (see Fig. 1 above). This work has also been discussed and published in two academic journals since that event and presented at an international academic conference in Canada. Continuing work is now in place to accurately evaluate this framework within the professional environment through engagement with a Trinidad based built environment development.

Substantial research and analysis of sustainable community knowledge and concepts acknowledges the importance of successful addition of contextual material when considering the proposed framework in a professional environment. Through this process we identify core elements inherent in the development of sustainable communities upon which CPTED may impact, and argue that contextual material needs to display a carefully considered balance between factors related to sustainable community development and those related to CPTED creation of safety and security.

Our emphasis concerning CPTED is therefore put forward as being fourfold:

- Development & utilisation of an evidence based, transferable, theory driven framework is essential to mediate failure risk
- Improved knowledge transference between academia and professionals will enhance understanding of CPTED and assist in the mediation of failure risk
- Contextual information upon which CPTED designs can be formulated and considered in conjunction with the new framework is an essential factor which is already acknowledged and often undertaken. However that contextual information gathering and analyses stage must be carefully driven in order to create a balance of context between core CPTED and core Sustainable Community Development factors in order to drive a holistic approach to the consideration of CPTED within design stages, reduce the risk potential and maximise outcomes in both arenas.
- Facilitation of Continuing Professional Development by professionals and policy makers in the built environment arena will ensure an evidence based and theory driven approach to
    - pre-design/planning knowledge requirements (contextual knowledge creation)
    - utilisation of CPTED within designs
    - inclusive policy design.

Of these the provision of balanced contextual information which can lead to incorporation of CPTED strategies in order to maximise potential outcomes is of note. Whilst this link between CPTED and sustainable community concepts appears obvious and is often referred to there appears to have been little emphasis created. In parallel there have been a number of texts alluding to the requirement of contextual knowledge being applied to CPTED consideration, and the development of models for a ‘pre-CPTED’ audit process to be applied. Such an audit is an acceptable vehicle for the provision of contextual information, primarily to/by built environment professionals or security consultants, when considering the incorporation of CPTED within the design process, and bears similarity to currently known and used Environmental Impact Assessments (EIA) in general purpose and concept.

As early as 1996 Brown and Jacobs considered Trinidad & Tobago EIA models and how adaptation could be used to also sustain community development processes. They suggest that a strategic approach to a holistic and process-oriented environmental management utilisation framework represents a new role for EIA's that may influence the community development process and contribute to environmental problem identification and resolution. Whilst we do not consider environmental or 'green' issues of sustainability in our research which was the theme of Jacobs and Brown's research their work does illustrate how a balanced approach to contextualisation through a successful 'audit' process has the potential to offer solutions within multiple areas of consideration.

Paulsen (2013) within his suitably titled book 'Crime and Planning: Building Socially Sustainable Communities' also emphasises that balance within this process is required but also acknowledges that it is difficult to reach and ultimately becomes "one of the most difficult aspects of integrating crime prevention into planning", there being no "one-size-fits-all approach to balancing competing interests across a community". He goes on to provide a contextual analysis (audit) model, however the analysis focus described remains on providing insight on crime issues and the ability of a proposed development to impact upon crime in that environment.

The New Zealand Ministry of Justice (2005) currently publishes a series of information documents on the introduction by local authorities of CPTED into strategies and policies, and how CPTED should be utilised. Within those documents the need to understand context is apparent with "CPTED safety audits" and "CPTED site assessments" being described and discussed, methods providing the collection and analysis framework for the provision of contextual information upon which CPTED application to developments can be considered. Whilst collecting limited socio-demographic data within this process it becomes apparent that the primary aims and objectives of such activities remain focused on crime and disorder issues with little or no mention of impact on the sustainability of a local community.

In contrast Local Authorities in Queensland, Australia utilise a 'Social Impact Statement' which aims to provide context to an urban area and in doing so will collate and analyse a host of information, much of which is relevant to sustainable community development core factors. However this process has been generally used on the development of whole town or town centre master plans as opposed to the development of planning at a more individual level such as a housing estate or commercial area. Ultimately the Master plan will generally result in an action plan which may include actions to incorporate CPTED into planning processes but does not link CPTED potential outputs with sustainability.

Greater Manchester local authorities in England require a "Crime Impact Statement" to be prepared and submitted with planning applications for developments, the primary aim of such documents being to assess crime risk and ability of the development designs to impact upon this. Similar, albeit differently named documents are also built in to the development planning processes in New South Wales, Australia (Monchuk & Clancy, 2013).

Whilst not seeking to lay criticism at these methods or processes to gather contextual material they provide brief examples of current activity in the field to deliver consideration of CPTED through an informed process. However this consideration of CPTED remains generally crime focused in terms of reduction or prevention linking to the creation of a safer environment. Little information is provided with regard to how the incorporation of CPTED into an environment may impact on the development of a sustainable community outside of immediate design factors, an area which is here proposed to be of significant value.

It is established that 'context' for the purposes of CPTED consideration is most suitably framed within the concept of creating sustainable communities and that without such a framework for its delivery 'contextual' knowledge is at risk of becoming diverse and of limited value. Creation of that contextual knowledge therefore requires careful direction in order to ensure a planned, relevant and knowledgeable outcome.

Following research over the last year into factors impacting the development of sustainable communities the now apparent impact available through the use of CPTED has developed, particularly features of an environment (in its widest sense) that can be used to provide balanced contextual information. Creation of contextual information through a pre-planning stage audit process is to be encouraged but that audit process should be designed to understand features of the community beyond those relating to crime and disorder levels and explore sustainable community factors upon which CPTED utilisation may also impact.

Continuing research in this field will undertake a thorough testing and ultimate evaluation of the proposed new framework in professional practice and development of a suitable structure for the gathering of contextual knowledge. That contextual knowledge gathering and analysis process will aim to be balanced between CPTED and Sustainable Community Development features to provide CPTED utilisation with a firmly evidence based and theory driven practice model.

Also under consideration but yet to be subject to research viability assessment is that through a primarily crime related contextual gathering process it becomes inherent in the use of CPTED that any future evaluation will be seeking evidence of crime reduction or prevention. Whilst both are significant aims of CPTED principles which are albeit indirectly linked to sustainable development factors of improving safety, we question whether that viewpoint presents a potential limitation to a true evaluation of the impact of CPTED within a development. It is conceivable that improved surveillance and balanced connectivity may not significantly change crime and disorder, in which case a crime and disorder biased evaluation may result in a negative viewpoint. However it is also conceivable that crime levels may be *maintained* as opposed to increasing or reducing and if alongside this it increases community cohesion through promoting improved community engagement should that be considered a positive outcome of CPTED design being incorporated into the development?

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