FOSTERING EFFECTIVE INTERDISCIPLINARY COLLABORATION BETWEEN THE BUILT ENVIRONMENT AND HEALTH

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ABSTRACT

The supportive role of the built environment for human health is a rapidly growing area of interdisciplinary research, evidence-based policy development and related practice. Yet despite closely linked origins, today the professions of public health and urban planning largely operate in the neo-liberal framework of academic, political and policy silos. A reinvigorated relationship between the two is essential if we are to foster an effective healthy built environment profession.

A recent systematic review of the burgeoning literature on healthy built environments identified an emergent theme which we have labelled “Professional Development”. This relatively new domain of scholarship relates to the development of relationships between health and built environment professionals. It covers case studies illustrating good practice models for policy change, as well as research on cost benefit analysis and market demand to encourage appropriate policy. Intertwined with this empirical research is a dialogue on theoretical tensions emerging as health and built environment professionals and academics seek to establish mutual understanding and respect. The nature of evidence required to justify policy change, for example, has surfaced as an area of asynchrony between accepted disciplinary protocols.

Our paper discusses this important body of literature with a view to initiating and supporting the ongoing evolution of interdisciplinary exchange between the health and built environment disciplines.

INTRODUCTION

"Silo: an airtight structure in which green crops are compressed and stored"

The supportive role of the built environment for human health is a rapidly growing area of interdisciplinary research, evidence-based policy development and related practice. Physical inactivity, social isolation and obesity are three of the major risk factors for many of the chronic diseases facing contemporary society. A recent systematic and comprehensive review of the burgeoning literature on healthy built environments (Kent et al. 2011) identified three key built environment "domains" that support human health. We briefly outline them below:

i. The built environment can support physical activity.

> *For example: integrating land use and transport to promote walking and cycling for transport; preserving a variety of open spaces for recreation; designing street networks and providing infrastructure for walking and cycling for recreation and transport.*

ii. The built environment can connect and strengthen communities.

> *For example: providing streets and public spaces that are safe, clean and attractive; encouraging residential development that is integrated, yet private; enabling community empowerment through meaningful participation in land use decisions.*

iii. The built environment can provide equitable access to healthy food.

> *For example: reducing fast-food exposure in the vicinity of school environments; retaining peri-urban agricultural lands as a source of easily accessed healthy food; encouraging the establishment of farmers markets and community gardens.*

Within an Australian context, this literature review demonstrates that the evidence on the role of the built environment in protecting and promoting human health is indisputable. And yet, despite the strength of this research evidence and closely linked origins, the contemporary professions of public health and urban planning largely operate independently of each other in the neo-liberal framework of academic, political and policy silos (Crawford et al., 2010). A reinvigorated relationship between professionals in health and the built environment is essential if this research is to be further developed and refined, as well as translated into effective policy and practice.

Part of this reinvigoration will be to examine and recount the ways public health professionals have already been working with colleagues from the built environment. Case studies illustrating good practice models for policy change, research on motivating and justifying new policy, and methodological and theoretical discourse are the chronicles of a professional revival. In the rush for empirical justifications, these important accounts are easily lost. They are significant, however, in that they provide the basis of a richer understanding of why and how two seemingly disparate professions can work together. The aim of this paper is to illuminate these accounts in an effort to support the establishment and ongoing evolution of a forum for interdisciplinary exchange across the health and built environment disciplines.

We draw on existing literature to do this in three stages. Our paper is prefaced by a novel exploration of the theoretical synchronicity between the traditions of urban planning and health. This is informed by our interpretation of the emerging methodological and theoretical discourse in the literature. To our knowledge, this reflection represents one of the first attempts to explore any common ground between "theories" of planning and health promotion. We then illustrate the emergence of a relationship by examining success stories in utilising empirical research as a catalyst for policy and institutional behavioural change. We review these stories to suggest some "key ingredients" to the revival of health and built environment professional relationships. Finally, we catalogue case studies on the ways that professionals have already worked together. Our aim is to assist those endeavouring to work collaboratively in creating a built environment that supports health and well-being of all communities.

METHODOLOGY

The literature discussed in this paper is part of a much larger comprehensive and systematic review of literature on the relationship between the built environment and health (Kent et al., 2011). The methodology for this broader review is summarised below.

First, economic, health, medical, transport and environmental internet and "grey" literature databases were searched using terms tailored for each database (as recommended in Weaver et al., 2002). This part of the review took place during April and May, 2010. The search results were then screened using article title and abstract, with duplications and obviously irrelevant studies removed. Papers were also sought from experts in the field. A database of 1,615 references relevant to the built environment and health was subsequently created. These references were then assessed for inclusion in the review and categorised into established key domains of the built environment - physical activity, social interaction and healthy food access. These domains address three of the major risk factors for contemporary chronic disease - physical inactivity, social isolation and obesity. The peer reviewed status of each reference was also checked against the criteria of Ulrich's Periodicals Directory.

In total 1,080 references remained for inclusion in the review. Outside of the three key domains initially identified, an additional and emerging theme relating to the translation of research into policy was identified. We labelled this "Professional Development". The theme encompasses case studies illustrating good practice models for policy change, research on cost benefit analysis, together with market demand to encourage appropriate policy. In addition, there is scholarship on the theoretical underpinnings of healthy built environments. In essence, this theme embodies literature that relates to developing healthy built environment interdisciplinary relationships. An analysis and discussion of this literature is the subject of this paper.

TOWARDS A THEORY OF HEALTHY BUILT ENVIRONMENTS

The Contemporary Focus of Public Health

The past 30 years has seen a shift in public health research and practice from the treatment of illness in the individual to disease prevention and health promotion in populations. This has included increased focus on the impact of environments on collective well-being (McLeroy et al., 1988; Stokols, 1996) and on the interdependence of environments and individual behaviour (McLeroy et al. 1988; McLeroy et al., 1992; Anderson and O'Donnell, 1994; Sallis et al., 2006).

Built environments have subsequently emerged as a focus in health research. This "reinvigoration" of the health-built environment interdisciplinary relationship has been expressed in various themes, from the built environment's impact on opportunities for utilitarian and recreational physical activity (Sallis and Glanz, 2009; Ewing and Cervero, 2010; Feng et al., 2010; Heinen et al., 2010; Shoup and Ewing, 2010) healthy food access (Burns and Inglis, 2007; Pearce et al., 2009; Kestens and Daniel, 2010), exposure to nature and green space (Barton, 2009; Abraham et al., 2010), community building (Berry, 2007; Zhang and Lawson, 2009), as well as noise abatement (Gidlöf-Gunnarsson and Öhrström, 2007), air pollution (Marshall et al., 2009) and crime (Landman, 2009).

Theoretically, this shift reflects the increasingly ecological orientation of the health promotion field (McLeroy et al., 1988; Stokols, 1996; Cerin et al., 2010; Langille and Rodgers, 2010). Ecological models of health promotion are underpinned by the understanding that health promoting and preventing interventions need to be considered across multiple levels and contexts - often simplified in the literature as the individual, social and environment.

Alternatives to ecological approaches to health promotion are theories that emphasise the individual as having responsibility for his or her own health. The health belief model, for example, was initially developed by Rosenstock in 1966 to predict personal behavioural responses to treatment received by acutely ill patients. This model has subsequently developed to predict the role individual knowledge can play in taking personal responsibility for chronic conditions such as heart disease (Ogden et al., 2007). Behaviour change theories also often emphasise the role of the individual in adapting behaviour to accommodate habits more conducive to health. Theories of behaviour change have been used to analyse cessation of smoking and excessive alcohol consumption (Steptoe et al., 1996) and appropriate levels of physical activity (reviewed by Hutchison et al., 2009). The more radical work of John Knowles (1977) aptly titled "The Responsibility of the Individual" adopts an ironically imperious tone to detail the decline in contemporary society's acceptance of individual responsibility for health. Knowles describes a culture in which good health is viewed as a societal right and the responsibility of the individual is disregarded. This condition has been powered by, among other factors, a neo-liberal sanctification of individual freedom and an almost evangelical belief in the abilities of physicians and medicine. Knowles concludes with the proposal that the individual has a "moral obligation to preserve one's own health – a public duty if you will" (p.59).

Since 1977, interpretations of the role of individual accountability in health promotion have progressed to recognise the ways social and built environments might impede an individual's capacity to be responsible for his or her own health. Bandura's application of social cognitive theory to health promotion, for example, retains an individual focus yet acknowledges that a comprehensive approach to health promotion requires changes to social systems that have widespread detrimental effects on health. This theory maintains an emphasis on individual responsibility by defining social systems as products of the perceptions of individuals. Theories of behaviour change have also developed to recognise the environment as an enabler, with acknowledgement that for an individual to change, adaptation must be physically possible (Gatersleben and Appleton, 2007).

Juxtaposed to theories accentuating the role of individual choices in health promotion are ecological theories which rely on the various environments in which the individual operates (Brownson et al., 2005; Sallis and Glanz, 2009; Pouliou and Elliott, 2010). These theories emphasise that the most effective interventions will operate at multiple levels. They will be tailored to place (Mitra et al., 2010) and the people living in that place, respecting that individuals of different ages (Carver et al., 2010; Frank et al., 2010), socio-economic and cultural backgrounds (Dahmann et al., 2010; Franzini et al., 2010; Turrell et al., 2010) and genders (Bonham and Koth, 2010; Michael et al., 2010) will respond to interventions differently. Furthermore, ecological theories recognise the role of educational programs, policy change and economic incentives (Gebel et al., 2005; Rodríguez et al., 2009) while acknowledging that environmental change can be low cost, high reach, and provide supportive environments for later targeted interventions (Brownson et al., 2006). Ecological models are based on the idea that comprehensive approaches to health promotion need to consider interventions at multiple levels – the individual, society and environment. We are most interested in environmental influences on health, as a theoretical space playing host to the reinvigoration of the interdisciplinary relationship between health and built environment professionals. We now turn to a consideration of how planning's theoretical context interfaces with health as part of our search for an understanding of how the two disciplines might better work together.

A Health Orientation for Planning

Planning is often criticised for lacking its own discrete theoretical grounding (Thompson, 2000). As a practical and busy discipline, it operates in highly politicised arenas at multiple scales. Nevertheless, planning is able to rally competing stakeholder demands and opinions, which is a great strength. In this professional environment, planning practitioners have learned to adapt and perform, rather than to reflect and question. As a result, the discipline has traditionally borrowed theoretical groundings from other specialisations in the social sciences to explore "how" land management decisions are made and "how" these decisions might be translated to spatial and social outcomes (Taylor, 1998; Cullingworth and Nadin, 2006). The question of "why" we bother to plan at all, however, has been left relatively under-explored.

In her more recent theoretical explorations, eminent planning theorist Patsy Healey (2010) revises the components of what she calls "the planning project". Healey proposes that the motivation to pursue governance with a planning orientation is linked to an intrinsically anthropocentric belief that it is worth striving to improve "the human condition" (p18). The role for planning is defined by recognition that "human flourishing depends on giving attention to multiple dimensions of human existence, as realised in particular places" (p17). Planners, therefore, provide the expertise to draw together these dimensions as they exist in place with an ultimate motivation to improve the human condition and promote human flourishing.

Theoretically, acknowledging that we plan to promote human flourishing is to acknowledge that we plan for human health. While this has historically been a central concern of planning (Cullingworth and Nadin, 2006), its explicit recognition has generally been buried deep within the day-to-day milieu of competing agendas. This is somewhat ironic given that much planning work has a health objective such as the management of community exposure to harmful uses, the equitable provision of safe places to live and work, the creation of opportunities to connect to each other or the ability to be mobile – physically and socially. And while these agendas have not been entirely removed from the promotion of human flourishing, they have demoted human health to an invisible and unidentified pursuit, thereby diminishing its importance. Accordingly, we propose that in order for the discipline of planning to promote health, it must explicitly recognise health as a primary objective.

The spatial and social effects and processes of what is generally considered "good planning" are also those advocated by the emerging approach to "healthy planning". Research exploring the professional planner's response to health planning guidelines has concluded that healthy planning encompasses the already "accepted wisdom" of the planning profession (Allender et al., 2009a, p. 102). Neighbourhoods nested within a walkable catchment of shops and services, connected by safe and efficient public and active transport

networks, well serviced with open space and other infrastructure such as footpaths and recreational facilities, have been the intentions of Australian strategic planning for at least the last 20 years. A health focus further legitimises the principles and practices planners recognise as “good planning”. A more explicit recognition of human health in planning theory and practice can therefore be a powerful driver to take the planning agenda forward.

Despite these theoretical and practical synchronicities, and the mutual benefits of alliance, in reality, we are still struggling to define what a healthy built environment might look like and how health and built environment professionals can work together to create such an environment. The planners drafting a regional structure plan, for example, rarely work in concert with public health officials to explore ways that the region can better support physical activity or access to healthy foods. Australia, as yet, lacks any legislated mechanism to include health impacts in the assessment of development proposals. Case studies of the ways this might be happening around the world, and discourse on the ways disciplinary differences can be transcended, are important in overcoming this struggle and provide an evidence base on which to build. The following section of the paper reviews case studies and discourse in the literature to provide an evidence base to inspire continued exchange across the health and built environment disciplines.

FROM THEORY TO PRACTICE

The discussion below starts with practical guidance from examples and discourse within the literature on ways the healthy built environment agenda is being initiated in the professional arena. A defined role for health, the practical and psychological benefits of funding for healthy built environment projects and ways of drawing in other stakeholders and agendas are discussed. We then turn to unpick some of the more complex elements of the health-built environment interdisciplinary relationship. For example, when is the evidence of relationships between the built environment and health "good enough" to initiate policy change? How can this evidence be presented to lobby for policy change?

The Key Ingredients for Healthy Built Environment Collaborations

Educate Professionals

Wooten et al. (2010) advise that healthy built environment interdisciplinary relationships should start with educating professionals. Their recommendation is drawn from implementation outcomes of various health related planning policies in California, USA. Education provides knowledge and skills, as well as creates opportunities for professional rapport and dialogue. Other studies explore ways that this education process can progress. Botchwey et al. (2009), for example, evaluate graduate-level courses in the US that address the built environment-health relationship. They describe in detail their interdisciplinary curriculum for a locally delivered course developed to educate planners and public health officials. Thompson and Capon (2010) provide an Australian based assessment of the effectiveness of tertiary healthy built environment education for both urban planners and health students. Pilkington et al. (2008) detail a UK based professional education program based on action learning. The program emphasises not only the practical components of each discipline, but also seeks to promote an understanding of the ethics, philosophy and core values of each profession.

Allocate Funding

Budgetary support is a mechanism to implement policy (rather than drawing from existing resources), as well as a way to legitimise health as a planning issue. It is an indication of institutional support. In their report on the results of an online survey of health officials in California, Schwarte et al. (2010) emphasise the importance of budgetary support simply because it dissolves resentment that may arise from the healthy built environment agenda being an added responsibility for planners and health professionals to consider. In evaluating healthy built environment programs in Melbourne, Australia, Thomas et al. (2009) found a key element of the success of programs was employment of a dedicated project officer with skills in engaging management and developing cross-disciplinary alliances. Bullen and Lyne (2006) advocate that funding of healthy built environment policy is particularly important in deprived neighbourhoods. This avoids exacerbating existing inequalities.

Define a Role for Health

A commonly identified struggle in the case study literature is establishing an initial, tangible role for public health professionals in the planning agenda. Wooten et al. (2010) suggest that a way forward is for health professionals to provide planners with basic data and analyses to help identify a geography of a community's

most critical health concerns. Chen and Florax (2010) for example use health data to map the impact of increased access to healthy food options on the body mass index of populations across disadvantaged neighbourhoods in Indiana. Their simulations have been used to inform zoning policies that provide incentives for chain grocers to open in disadvantaged areas. Allender et al. (2009) take this recommendation further, advocating that health statistics backed by cost benefit data are more likely to result in policy change. This rapidly developing and increasingly complex body of literature is further discussed below. Another role identified for health professionals includes engaging the media and rallying political commitment (Richards et al. 2010). As expressed by a London transport planner discussing sustainable transport: "Health is one of the biggest drivers there is alongside climate change to actually take this agenda forward" (Allender et al., 2009 p. 110). As previously discussed, the argument for health adds weight to the “good planning” agenda. There is evidence that media exposure and the support of senior legislators can be particularly influential in the passage of healthy built environment policy and legislation (Gomm et al., 2006; Salvesen et al., 2008; Dodson et al., 2009).

Draw in Other Stakeholders and Agendas

As collaboration ensues, the contested nature of places and the qualities of people who live, work and travel within them will become apparent. There will never be a single set of “rules” for managing health outcomes in the built environment. The most achievable and acceptable healthy built environment may not be the most economically productive, the most politically expedient or even the most environmentally friendly. Akin to the challenging nature of interdisciplinary collaboration, the demands and desires of competing stakeholders will have to be managed through negotiation, willingness to explore new solutions and, ultimately, an acceptance of compromise (Kent et al., 2011).

The healthy built environment agenda needs to operate within and not alongside existing land use governance structures (governance here is narrowly defined as the exercise of administrative authority). This implies connecting with the processes and regulations that are the domain of traditional town planning, as well as with a multitude of other stakeholders (Wooten et al., 2010). This action of connection not only garners support for healthy built environments, it can have the added benefit of connecting health with other high profile agendas, such as climate change (Younger et al., 2008; *The Lancet*, 2009; *NSW Public Health Bulletin*, 2010).

There is a body of literature that explores stakeholder perspectives of healthy built environments. These include planning professionals and local government staff (Allender et al., 2009; Thomas et al., 2009); retailers (Clark et al., 2010); school boards (Adler et al. 2008); environmental health officers (Schwarte et al., 2010); legislators (Dodson et al., 2009); economists (Vecchiarelli et al., 2005; Adler et al., 2008) developers (Grant, 2009); families (Withall et al., 2009) and community advocates (Richards et al., 2010). The general, and perhaps unsurprising conclusion from this work is that stakeholder perspectives are diverse. Further, given that resource constraints are a barrier, stakeholders are frequently motivated by cost benefit analyses that demonstrate budget savings. Publicity is also important, implying that change must not just be quantifiably beneficial, but demonstrably so. Finally, meaningful involvement of the community through consultation and education, is often cited as key to translating policy into behavioural change (Gomm et al., 2006; Eyler et al., 2008).

It is an easy task to argue that other stakeholders and agendas should be “drawn in” to the healthy planning process. The reality of effectively actualising such broad collaboration is another matter entirely. It requires building and retrofitting firm foundations on which the health-built environment interdisciplinary relationship can rest and grow. The following section draws on the literature that can assist in this endeavour. The research exposes some of the more controversial issues, including barriers to, and opportunities for advancing and nurturing the healthy built environment interdisciplinary working relationship.

Working Together to Influence Policy Change – “Are we speaking the same language?”
(Trayers et al., 2006 p. 49).

The need for policy change to be mandated is a recurring theme in case study literature. This issue is best summed up by an Australian planner who remarked "From where I sit if it's not in the [State] Planning and Environment Act it doesn't have to happen" (Allender et al., 2009b p. 5).

Two questions need to be answered before policy change can occur. The first relates to the nature of evidence: at what point do we consider the evidence to be strong enough to justify an attempt at policy change? The second question is perhaps less complex and relates to the way this evidence might be presented to the public and politicians to influence policy change.

Evidence: When enough is enough?

The question about evidence cuts to a core division between the health and planning traditions. Traditionally, the nature of evidence planners use to develop policy is different from that used by public health officials. Australian planning's early to mid 20th Century focus on greenbelt cities, for example, was based on an historical appreciation of the health benefits of open space for overcrowded and dirty cities (Cullingworth and Nadin, 2006). Plans such as Sydney's "County of Cumberland Plan" and Perth's Endowment Lands project reflect this appreciation. Basing policy change on an "appreciation", rather than hard evidence, would pose a problem for a public health based intervention.

Establishing non-spuriousness by removing confounding variables (such as residential self selection) and establishing time precedence through longitudinal research, are regularly identified as the missing elements of causal proof of the relationship between the built environment and health (see for example Black and Macinko, 2008; Dunton et al., 2009). A lack of standardisation in measurement of environmental and health variables has also received attention as something that is missing in the research (see for example Ball et al., 2006b; Bodea et al., 2008). However, it must be recognised that the way people live and move around a place cannot be subject to the methods employed to produce the standard of evidence traditionally used to underpin health policy decisions. Recent discourse questions whether causal proof of the complex relationships between the built environment and health can ever be established. Increasingly, it is becoming obvious that more comprehensive ways to explore and understand the complex issues need to be embraced. This includes the use of case studies, in-depth observations, cost benefit analyses, environmental and social impact assessment, and demand analyses (for examples see Ball et al., 2006a; Coveney and O'Dwyer, 2009; Trayers et al. 2006; Thompson et al., 2007).

Through embracing and exploring diverse methods, planning and health professionals must work to develop a mutually acceptable standard of evidence. There is research attempting to tackle this issue and bridge the gaps in understandings between the built environment and health for both policy makers and researchers. For example, Moodie (2009) uses Melbourne based illustrations to develop a set of guidelines for researchers to establish common interests and respectful relationships. Bernard et al. (2007) study the impact any standardised notion of spatial scale might have on our ability to accurately examine the relationship between place and health. They apply structuration theory to redefine neighbourhoods as domains through which people may have access to the resources required for healthy lifestyles. Cummins et al. (2007) discuss the mutually reinforcing relationship between people and place, calling for greater recognition of contextually sensitive policy. Lawrence (2004) argues for integrative and interdisciplinary approaches to facilitate linkages between the built environment and health, with an acknowledgment of disciplinary expertise, as well as respecting expertise in other disciplines, as fundamental in creating shared understandings.

Selling the Healthy Built Environment Concept

The second question, the way this evidence might be presented to the public and the politicians to influence policy change, is the focus of another emerging body of scholarship.

In a separate application of structuration theory, Filion (2010) assesses barriers to the development of healthy built environments. He concludes that when compared to other periods of significant urban change (such as the post industrial shift to separate land uses or the post World War II movement to low density), there is an insufficient critical mass of institutional and financial motivation to implement healthy built environments. Similar observations were made by Grant (2009) who conclude that the major obstacle to healthy built environment development in Canadian urban areas is weak political commitment combined with developer resistance. Dodson et al. (2009) also note the role of powerful role of market forces in preventing healthy eating policies in schools.

The ability to communicate the evidence in ways likely to influence the intertwined forces of politics and the market will therefore be key to effecting policy change. There is an emerging body of research seeking to prove that the benefits of healthy built environments outweigh the cost of their construction. Stokes et al., (2008) for example simulated the potential yearly public health cost savings associated with investment in infrastructure for light rail (considered to be active transport). They were able to conclude a nine year cumulative public health cost savings of US$12.6 million.

Also with a focus on incentivising the development of healthy built environments is a body of research analysing market demand for, and developer perspectives of, these environments. Carnoske et al., (2010), for example, surveyed 4,950 real estate agents and 162 developers in the USA. The aim was to assess

factors influencing homebuyers' decisions, as well as incentives and barriers to developing healthy built environments. The research concludes that there is a perception of increased residential demand for healthy built environments. However, developers, in particular, perceive significant barriers to creating these communities (Carnoske et al., 2010). The limitations of local government politics and regulations perceived by developers were also confirmed by other literature (see for example Levine and Inam, 2004 and Bjelland et al., 2007). In a larger scale study of actual consumers, Handy et al., (2008) analysed data from two surveys from 2003 (n= 5,873) and 2005 (n=12,630) to assess changes in consumer support for "Traditional Neighbourhood Design" (TND). Surveys described a traditionally designed neighbourhood and asked respondents "how much would you support the development of communities like this in your area?" The study concludes that support for TNDs had increased from 44 to 59 percent from 2003 to 2005. In a review of over 50 relevant studies, Shoup and Ewing (2010) examine the economic value of outdoor recreation facilities, open spaces and walkable community design. Their synthesis of the research concludes that open spaces such as parks and recreation areas can have a positive effect on residential property values and justify higher property tax revenues for local governments. The research also concludes that compact, walkable developments can provide economic benefits to real estate developers through higher home sale prices, enhanced marketability and faster sales or leases than conventional development.

CASE STUDIES TO INFORM AND NURTURE NEW WAYS OF WORKING

We conclude our paper with a snapshot of a burgeoning body of case study literature examining how health and built environment professionals are successfully working together around the world. This literature provides a rich and grounded understanding of opportunities for implementing healthy built environments, showing how common barriers are being addressed and overcome. Further, this work can be consulted and applied in diverse contexts for a myriad of healthy built environment projects.

Numerous case studies record the ways health and built environment professionals are successfully working together. These include evaluations of health impact assessment tools (Higgins et al., 2005; Barton and Grant, 2008; Farhang et al., 2008), neighbourhood self assessment (Bassett and Glandon, 2008), and the ongoing impact of the World Health Organization's (WHO) Healthy Cities Program (O'Neill and Simard, 2006; Hall et al., 2010). Dobson and Gilroy (2009) assess the implementation of active living goals in two disparate communities in Oregon, USA, as do Huberty et al. (2009) in Nebraska, McCreedy and Leslie (2009) in Orlando, and Santana et al. (2009) in Portugal. Kelder et al. (2009) present an interesting assessment of the implementation of Texas Senate Bill 19 to mandate physical activity in the State's elementary schools. Similarly, Raczynski et al. (2009) assess the implementation of legislation in neighbouring Arkansas. Schasberger et al. (2009) review factors contributing to the success of a community driven trail network in Wyoming, USA. Hess (2009) investigates disparities between the visions of planners and the work of engineers in attempts to bring pedestrian oriented streets to Toronto. In an ex-post evaluation of common success and failure factors behind eight active transport projects in the Netherlands, van den Bergh et al. (2007) conclude that process related, social and psychological factors are more important in determining the success of a project than economic or technical factors.

In an Australasian context, Harris et al. (2009) developed an audit tool to assess the inclusion of health considerations in environmental impact assessment of major projects in NSW. Using interviews, Thomas et al. (2009) investigate the extent and influences on the use of integrated planning to promote physical activity at the local government scale in Melbourne. Also in Melbourne, Stanley and Hensher (2008) outline the partnerships developed to implement a series of new bus services. In a policy monitoring exercise, Bullen and Lynne (2006) surveyed New Zealand's senior planners to evaluate plans promoting physical activity. Kokotailo (2006) overviews the challenges faced by planners in the development and implementation of New Zealand's walking and cycling strategy. In addition, there are excellent locally relevant unreviewed case studies published on various Australian websites such as the NSW's Premier's Council for Active Living, Victoria's VicHealth, the National Heart Foundation and Healthy Places and Spaces. In the USA, there is the Active Living Research project and the Centres for Disease Control.

CONCLUSION

In summary, research on the link between human health and the built environment is irrefutable. It justifies increased theoretical and professional recognition of health as a primary motivator for planning. The foundations for this have already been laid by existing synchronicity between health and planning "theories".

Beyond theory, a reinvigorated health focus for planning can further legitimise the principles and practices planners have long recognised as "good planning". Health is a driver that can take the planning agenda

forward. Accordingly, the relationship between health and planning professionals needs to be nurtured from both theoretical and practical perspectives. While it is true that health and planning were successful partners a long time ago, this was not within the contemporary neo-liberal framework of academic, political and policy silos. An effective healthy built environment profession today rests on building a respectful relationship out of mutual understanding and fruitful, practical engagement across these silos. Scholarship on how this is happening is emerging and this body of research should act as a forum for the interdisciplinary exchange of examples, ideas and commentary. These innovative lines of communication must be supported and catalogued for ongoing reference.

This discipline area is in its infancy. It is our hope that it is a discipline that develops to create built environments that can better promote human health and well-being.

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