

Defining Sustainable Transport Through Planning Practice:

Working towards developing a normative mobility framework to support land-use and transport planning integration

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ABSTRACT

This paper situates itself within the current transport planning debate by enquiring into the underlining values and beliefs internalised by professional transport planners, and how such values and beliefs play out against institutional and practical constraints planners face daily during their attempts to develop transport systems in a more sustainable manner. This paper presents a starting point of research derived from a literature review as part of an on-going PhD Higher Degree by Research project that the author is currently undertaking. Findings from the literature review revealed two findings: 1) an over-emphasising of the built form's ability to alter travel behaviour which under-emphasises the role of transport planner, which feeds into 2) an under-appreciating the crucial role that integrating various transport modes together might play towards achieving more sustainable transport outcomes. These findings have lead to the belief that attention should be placed towards developing a normative mobility framework. Building on current new theories of mobility (Urry, 2007) and more recent work related to "path-dependent and institutional inertia" (Low & Astle, 2009), a normative mobility framework as discussed seeks to understand the values, beliefs and practices of professional transport planners and how institutional arrangements are perceived by the actors. Conceptual development of such a framework borrows from practice and normative theories which are therefore briefly explained:

The kinds of problems that planners deal with - societal problems - are inherently different from the problems that scientists and perhaps some classes of engineers deal with. Planning problems are inherently wicked. As distinguished from problems in the natural sciences, which are definable and separable and may have solutions that are findable, the problems of governmental planning - and especially those of social or policy planning - are ill-defined; and they rely upon elusive political judgment for resolution. (Not "solution." Social problems are never solved. At best they are only re-solved -over and over again) (Rittel & Webber, 1973, p. 160).

There are many options and opportunities for change in the land-use and transport sectors.... [M]ost measures are well tried. The debate is not really about what needs doing or even the range of measures available. It is more about how to facilitate implementation (Banister, 2005, p. 84).

Introduction

In the continuing evolution of travel, the automobile has arguably played the greatest role in shaping the built environment. Environments designed for and devoted to the car, now comprise roughly one-quarter of all land in London, UK and nearly one-half of land in Los Angeles, USA (Sheller & Urry, 2000, p. 746). A range of consequences emerge when environments are designed to facilitate the movement of cars. According to Dieleman and Wegener (2004), most prominent are:

(i) deinvestment in urban core areas and central city decline; (ii) reliance on the use of private cars and therefore to growing number of vehicle miles travelled, road congestion and decline of air quality; and (iii) the loss of open space and scenic areas in and close to metropolitan regions" (Dieleman & Wegener, 2004, p. 308).

"Researchers and practitioners have spent well over a decade debating the need for a change in the way we plan for transport in order to develop more sustainable cities" (Curtis, 2008, p. 104). Although the built environment does not directly influence travel behaviour, scholars continue to advocate urban planning and design policies aimed at reduced-auto travel (Calthorpe, 1993), non-motorised travel (Blanco, et al., 2009), sustainable travel (Newman &

Kenworthy, 1999), and increased walking and cycling travel (Tolley, 2003) as crucial steps in solving problems associated with auto-dependent transport systems (Newman & Kenworthy, 1999) such as spatial inequality (Currie, 2009; Loader & Stanley, 2009; Mackett, Achuthan, & Titheridge, 2008), congestion (Horner, 2004), oil dependency (Dodson & Sipe, 2008), and environmental degradation (Newman & Kenworthy, 1999).

The origin to transportation planning and many of the methods used to measure and plan automobile use is generally regarded as originating from the Chicago Area Transportation Study (CATS) in 1955 (A. Black, 1990; Mees, 2000). CATS was critical in that it formed the foundation for transport planning doctrine, provided a coherent real-world case study of rational planning and transport modelling, and played a central role in developing the idea of and need for specific density requirements for public transport to be viable, all of which remains deeply engrained in current transport planning and debate (Banister, 1994; Mees, 2000). The seminal study in transport planning pioneered the transport planning model (TPM) or four-stage aggregate model, which according to Banister (1994) remains the “bedrock” for transport forecasting (p.129). The value of TPM is “its ability to examine the city and region at the aggregate level and to establish relationships between a given land-use pattern and travel” (Banister, 1994, p. 129).

Banister (2008) maintains that regardless of theory (random utility, discrete choice, etc) or method/model (activity-based, demand, etc.) utilised – when applied to transportation forecasting, the four-stage aggregate model and its underpinning economic paradigm is concerned with identifying and measuring, three distinct components: 1) the built environment (eg: density, land-use mix, etc), 2) socio-economic variables (eg: education, auto ownership, housing preference, etc), and 3) travel mode (eg: automobile, mass-transport, walking, etc). Banister maintains the economic paradigm contains two fundamental principals, “that travel is a derived demand and not an activity that people wish to undertake for its own sake, ... [and] that

people minimise their generalised costs of travel, mainly operationalised through a combination of the costs of travel and the time taken for travel” (Banister, 2008, p. 73). As Banister cautions, these two principles “have important consequences, as they are embedded in most analysis and evaluation studies” (Banister, 2008, p. 73). Citing several studies that evaluate non-work travel trips, Banister questions whether all travel to be a derived demand, concluding the traditional view no longer reflects today’s “mobile society” (Urry, 2007) and that substantial “amounts of leisure travel are undertaken for its own sake and the activity of travelling is valued” (Banister, 2005, p. 236).

Banister is not alone in his thinking, reflected in the recent concern within transport literature to critically unpack the underlining assumptions regarding many of the normative modelling and transport practices. “As transport is a significant contributor to the consumption of scarce resources and overall environmental damage, it is necessary for transport policy to address ways of reducing these adverse environmental impacts” (Marshall & Banister, 2000, p. 321). However, Robert Cervero (1986b) cautions,

There are no ready-made solutions, but rather a thicket of thorny institutional and implementation problems that planners are going to have to face. Among the choices available, the redesign of suburban workplaces into denser clusters, the strategic siting and phasing of new jobs and housing, trip reduction measures that encourage employer initiatives like flex-time, and impact-based fee programs offer the best hope (Cervero, 1986b, p. 404).

Cervero has arrived at this point on numerous occasions (Cervero, 1986a, 1998, 2002; Cervero & Duncan, 2006), and warns that attempts to measuring the unique travel effects from any one built environment variable is fruitless because of the high multicollinearity and statistical interaction of built environment variables” (Cervero & Kockelman, 1997, p. 218). Cervero’s

complex multicollinearity and statistical caution is reminiscent of Leibbrand's (1970) impassioned cry for integrated land-use and transportation planning.

“Town building and traffic cannot be separated. One without the other is unthinkable. There is not such thing as a town without traffic; and human settlements grow up at every transportation node.... If transportation is subordinated to town planning in our thinking, or vice versa, there will inevitably be shortcomings in our judgement of facts or in the planning of new facilities” (Leibbrand, 1970, pp. V, Foreward).

At first glance it would appear that forty years after Leibbrand's dogmatic decree, planning academic circles have embraced integration more than practicing planners and policy makers. In planning academic circles, insufficient integration of landuse and transport planning – particularly at the metropolitan regional level – is often linked to continued automobile dependence (Banister, 1994; Laird, Newman, Bachelors, & Kenworthy, 2001; Newman & Kenworthy, 1999); with others citing the importance for integration (Cervero, 1998; Leibbrand, 1970; Mees, 2000; Vuchic, 2000, 2005), and providing examples of and procedures for integration (Curtis, 2006; Curtis & James, 2004; Laird, et al., 2001). However, although planning academics generally write in a manner that such integration is self-evident (Brownsey & Rayner, 2009; Curtis, 1999; Hine, 2000; Hull, 2005; Leibbrand, 1970; Vuchic, 2000), a persistent disconnect between planning theory and planning practice remains.

DRIVING THROUGH THE PROBLEM

For the purposes of simplifying a group of literature that literally spans multiple disciplines and over 60 years of empirical, theoretical, and methodological differences, the literature is grouped and discussed as two larger groups. Group A (Table 1) consists of 1) the physical sciences such as urban planning, transport planning, transport/human geography, and 2) the

psychological sciences, such as health, environmental psychology, and social ecology. Group A is generally concerned with understanding individual travel behaviour and its relationship to the built environment. Group B consists of case studies comparing multiple countries and/or multiple cities within one country, and more technical based writing aimed at theorising and delineating transport operating and planning requirements. Group B is generally more concerned with larger policy issues and uncovering themes learnt.

Traversing through both groups is a daunting task. However, one theme that emerges when reading from either group is a general absence of professional planning viewpoints. Even when these two camps fuse, such as recent work by Carey Curtis regarding Perth, Western Australia, Australia (Curtis, 2005, 2006, 2008), the discussion comprises very senior policy and director levels, with professional transport planning voices generally absent.

Travelling Behaviour: Reviewing Influences and Antecedents

This first group has historically concerned itself with predicting travel flows based on specific land use patterns. More recent literature has aimed to understand how travel behaviour might be altered, influenced, and changed by manipulating land use patterns (Randall Crane, 2000, p. 4). These slight differences lead to a further subdivision within Group A, which either:

Concerns itself with how/if the built form alters travel behaviour, such as:

- urban form (eg: traditional versus modern suburban neighbourhoods)(Boarnet & Sarmiento, 1998; Cervero & Radisch, 1996; R Crane & Crepeau, 1998; Handy, 1996b; Handy, Cao, & Mokhtarian, 2005)
- density (Levinson, Kumar, & Center, 1997),
- accessibility and connectivity (Handy & Clifton, 2001), and
- pedestrian and bicycling design (C. Black, Collins, & Snell, 2001; Forsyth, Hearst, Oakes, & Schmitz, 2008); or

Concerns itself with antecedent variables and their potential role in travel behaviour, such as :

- self-selection (Curtis & Headicar, 1997; Handy, Cao, & Mokhtarian, 2006; Kim, Pagliara, & Preston, 2005),
- human/household activities/coordination (Bonaiuto, Bonnes, & Continisio, 2004; Jarvis, 2001, 2003; Kwan, 1999; Lee, Washington, & Frank, 2009),
- individual choice/preference (Handy, Weston, & Mokhtarian, 2005; Van Vugt, Meertens, & Van Lange, 1995), and

- targeting automobile drivers to switch to non-auto travel modes (Curtis & Headicar, 1997; Loukopoulos & Gärling, 2005)

Both groups move within or combine aspects of each other. However, primary concern remains with how to influence or alter individual travel behaviour.

Randall Crane's (2000) article *The Influence of Urban Form on Travel: An Interpretive Review* reviews and categorises central findings contained in the travel behavioural literature. Crane classifies and describes the three most common methods used to study these questions: simulations, descriptive studies, and multivariate statistical analysis. Simulations are hypothetical computer models that simulate and measure different transport alternatives. Crane finds such models useful, but acknowledges "such hypothetical calculations are ill-equipped to address certain questions" (Randall Crane, 2000, p. 5). Descriptive studies incorporate actual data from travel diaries or larger government census to answer specific questions, such as "how do people who live downtown get to work, and how does this compare with the commute mode choice of suburban residents?" (Randall Crane, 2000, p. 5). These studies successfully describe particular travel behaviour during a particular place and time, but are generally incapable of informing "why people behave as they do, particularly with regard to an activity as complex as travel" (Randall Crane, 2000, p. 5). Multivariate techniques remain the dominant methodology utilised to study travel behaviour. The studies use complex statistical regression analysis to isolate and measure the significance of certain variables. Crane asserts these studies generally succeed because of their ability to account for multiple variables – "[m]any things appear to matter, and multivariate methods are well suited to the analysis of such situations" (Randall Crane, 2000, p. 5). Although Crane believes these studies provide the greatest potential to understand travel behaviour, he warns even these studies suffer from not including the correct number or type of variables (Randall Crane, 2000, p. 12), weak conceptual frameworks (Randall Crane, 2000, p. 14), and that the level of influence and interaction

between travel and built form often remains tied to the study's geographical space and time and as such can not be easily generalised at the policy level (Randall Crane, 2000, p. 18).

Handy's (1996a) conclusions of the travel behaviour literature mirrors much of Crane's findings, although she demarcates the literature slightly different - aggregate and disaggregate compared to Crane's simulation, description, and multivariate statistical analysis divisions. Stead and Marshall (2001) further demarcate the literature different to both Handy and Crane, but again, their conclusions generally match the other two author's findings (Stead & Marshall, 2001).

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A Psychological Profile: Reviewing Attitudes and Habits

Travel behaviour literature also considers the individual – the primary reason being that the “relationship between travel decisions and spatial characteristics of the environment is established through the individual's perception and cognition of space” (Hannes, Janssens, & Wets, 2009, p. 76). However, as opposed to the first subgroup of Group A,

Concern is placed on more health, sociology, and psychology disciplines, such as:

- mental maps and wayfinding (Allen, 1999; Arentze & Timmermans, 2005; Golledge & Gärling, 2004; Hannes, et al., 2009; Hensher, Button, Haynes, & Stopher, 2004; Tversky, Morrison, Franklin, & Bryant, 1999)
- habits and norms (Bamberg, Rölle, & Weber, 2003; Eriksson, Garvill, & Nordlund, 2008; Gärling & Axhausen, 2003; Kallgren, Reno, & Cialdini, 2000; Klöckner & Matthies, 2004; Schlich & Axhausen, 2003; Verplanken, Walker, Davis, & Jurasek, 2008),
- lifestyle, preferences, and attitudes in general (Dijst, Farag, & Schwanen, 2008; Flamm, 2009; Gärling, Gillholm, & Gärling, 1998; Gilbert & Foerster, 1977; Nilsson & Küller, 2000; Parkany, Gallagher, & Viveiros, 2004),
- environmental attitudes specifically (Flamm, 2009; Nilsson & Küller, 2000; Walton, Thomas, & Dravitzki, 2004),
- sense of community, place attachment, and liveability (Gustafson, 2001; Hidalgo & Hernandez, 2001),
- how individuals perceive their walk and bicycle routes (Alfonzo, 2005; Appleyard, 1970; Brown, Werner, Amburgey, & Szalay, 2007; Burgoyne, Coleman, & Perry, 2007; Day, Boarnet, Alfonzo, & Forsyth, 2006; Rodriguez, Khattak, & Evenson, 2006; Yagil, 2000), and
- mobility biographies (Ahas, Aasa, Silm, & Tiru, 2009; K. Axhausen, 2008; K. W. Axhausen, 2007; K. W. Axhausen, Frei, & Ohnmacht, 2006; Lanzendorf, 2003).

How individuals observe space when travelling occurs in two ways. First, “the information is filed in the individual’s mental map (spatial learning). Subsequently, the mental map shapes — among others — the individual’s travel decisions (travel planning), because it reflects the individual knowledge and frame of mind concerning the environment and its transportation systems” (Hannes, et al., 2009, p. 76). The concept of mental maps borrows some thinking from the urban design literature. Montgomery (1998) writes that (Alexander, 1979) and (Lynch, 1960) were amongst the first to stress that the psychology of place is “bound up in the notion of ‘mental maps’ which people use as internal guides to urban places”, and which require individuals to “rely on their senses to tell them whether a place feels safe, comfortable, vibrant, quiet or threatening” (Montgomery, 1998, p. 95).

The environmental psychology literature also explores how individuals arrive at “deciding travel purpose and mode, destination and day of the week, departure time and route, and other more complex combinations of the activity attributes and associated travel” (Gärling & Axhausen, 2003, p. 3). The limited use of socio-demographic variables (eg: age, education, car ownership, and mode) by the first subgroup generally neglect concepts such as habit, and how previously learnt experiences might affect subsequent travel choice (Gärling & Axhausen, 2003, p. 3). Verplanken et al (2008) write that the daily act and decision-making to physically travel is intricately woven into daily life and that travel decisions transform into repetitive habitual acts. This “habitual quality of travel mode choice behavior has been acknowledged as a factor of importance and is included in models of travel mode choice” (Verplanken, et al., 2008, p. 122).

One growing area in understanding travel habits pertains to recent research that discovered “individuals with strong travel mode habits were less likely to acquire information about alternative options and travel mode choices conditions compared to weak habit individuals (Verplanken, et al., 2008, p. 122). This has caused some researchers to suggest that such

disruptions provide unique windows in which to change and/or alter behaviour, a concept termed the “discontinuity hypothesis” (Verplanken, et al., 2008, p. 122).

Zacharias argues that then spatial decision making of such environments becomes an integral part “to the dynamics of pedestrian traffic, rather than other transportation modes” (Zacharias, 2001, p. 3). The findings from the health/planning literature generally indicate a wide range of environmental and social conditions offered by individuals for walking or not walking, such as: “accessible or high-quality pathways”;... “good access to desired destinations”; ... [perceptions of reduced crime]; “the absence of people; physical (or nonhuman) incivilities such as unattended dogs, vacant lots, litter, and graffiti; and limited visual surveillance of an area, as well as potential hiding places and blocked escapes” (Brown, et al., 2007, p. 36).

A MULTI-MODE INTEGRATED APPROACH TO THE PROBLEM

It is worthwhile to keep in mind Cervero’s caution that there “are no ready-made solutions, but rather a thicket of thorny institutional and implementation problems” (Cervero, 1986b, p. 404) when reading through the second group of literature. In attempting to resolve Rittel and Webber’s “wicked problem”, significant advancements have been made over the past 20 years in understanding, evaluating, and in successfully building and operating transport systems perceived as more sustainable than existing automobile-dominated systems. However, planning is inherently political (Klosterman, 1978) – if transport can be described by one word it might be political – which may partly account for implementing “best practice” to be a more complex and difficult endeavour than a simple plug-and-play exercise.

In empirically testing the almost axiomatic connection believed to exist between density and “successful” public transport systems, Mees (2000) writes that “all genuinely successful urban public transport systems – be they in Zurich, Munich, Metro Toronto or Vancouver – share a common feature, namely central, regional planning by a public agency” (Mees, 2000, p. 286).

Mees concluded that comprehensive service provision via an integrated agency overseeing an integrated transport network play a much more important role than density. In summarising his review of 12 different “transit metropolises” from around the world, Robert Cervero’s (1998) findings generally agree Mees, writing that,

What matters in all instances is that transit and the city harmoniously co-exist. Successful transit metropolises not only enjoy high levels of regional mobility but support larger policy objectives as well – sustainability, accessibility, livability, social diversity, entrepreneurship, and the broadening of choices in where and how people live and travel (Cervero, 1998, p. 402).

Findings such as those argued by Mees and Cervero trend back as far as the 1960’s when Leibbrand (1970, pg. 89) warned all “lop-sided solutions are dangerous”, and that continued support for “pedestrian towns, satellite towns and sky-scrappers as slogans” occur without any serious thought. Moving forward 30 years, Vuchic (2001) agrees with Leibbrand, stating unbalanced transportation systems will only be successfully tackled by addressing three policy goals: “make car use less attractive,... provide viable alternatives to car travel,... [and] apply integrated and coordinated planning of urban form and transportation with land-use controls to ensure its implementation” (Vuchic, 2000, p. 327).

Vuchic writes extensively on the complex and vital role of transport policy, and how individual policies when combined together can take on a life of their own, often in ways quite different to their original intention. Vuchic maintains that policy aimed at providing “balanced” transport provision must appropriately combine both push and pull policies through successfully mixing “car disincentives (CD)” and “transit incentives (TI)”. Combining CD and TI policies “is the most effective transport system planning approach for two reasons. First, the two policies can be mutually supporting” (Vuchic, 2000, p. 247), and second, applying disincentives such as

physical changes (eg: traffic calming) and pricing structures (eg: congestion pricing) are more likely to be accepted if improved transport alternatives are also provided.

Mirroring much of Vuchic's discussion, Banister (2005) states that “[p]ublic transport in cities should be of a sufficiently high standard to make car ownership unattractive, particularly if the costs of ownership are high because of the city insurance premiums” (Banister, 2005, p. 8). Along the same lines as Vuchic, Banister argues for combining a range of different policy measures (most of which are available) via new and improved institutional and organizational structures. In order to accomplish this task, Banister outlines three core packages to:

- Reduce the need to travel in cities (through development and land-use policies)
- Make people fully aware of the costs of travel (through fiscal and regulatory policies)
- Make full use of the technological options available (through a switch to non-carbon sources of fuel)

Banister and Vuchic are not alone in arguing for “new and improved institutional and organisational structures” and for “combining a range of different push and pull policies”. The *Transport Policy Journal* (2008, volume 15, issue 6) recently devoted a special issue to exploring how decision makers at the transport policy level can be supported “in their pursuit of sustainable urban transport strategies” (May & Ison, 2008, p. 325). The impetus for the special issue arose from a conference in Europe that included a survey of 168 cities on issues relating to developing sustainable transport strategies. The survey concluded cities “knew how to specify a sustainable urban transport strategy, [but that] implementing such strategies was proving ‘easier said than done’” (May & Ison, 2008, p. 325). The principal barriers to implementation included “poor policy integration and coordination, counterproductive institutional roles, unsupportive regulatory frameworks, weaknesses in pricing, poor data, limited public support and lack of political resolve” (May & Ison, 2008, p. 325).

WHAT'S NORMAL?: REVIEWING NORMATIVE PLANNING

An ontological assumption underpinning this paper is that pursuing integration of land use and transport is worthwhile yet challenging (Curtis, 2008). By decentring from this current debate, this paper instead places emphasis on examining the processes and practices in transport planning. The aim of developing a normative mobility framework is to develop a typology that might shine insight into the complex nature that is transport planning.

A normative mobility framework embraces the premise that part of the difficulty in considering and defining normal travel stems from the fact that planners inherently don't think along similar conceptual lines, but more importantly, that the transport literature has often been remiss in uncovering professional planner's opinions. Two important findings from the above literature review point to: 1) an over-emphasising of the built form's ability to alter travel behaviour which under-emphasises the role of transport planner, which feeds into 2) an under-appreciating the crucial role that integrating various transport modes together might play towards achieving more sustainable transport outcomes.

Acknowledging the literature above, this paper now turns to discussing potential holes for further research aimed at providing pathways for transport policy directed at developing more sustainable transport systems. To explore new avenues of methods and theories that might more successfully account for understanding the institutional arrangements surrounding transport planning processes, and the role of transport planners as a profession within these processes, this paper begins by stating:

The existing approach to transportation planning becomes (intentional or unintentional) the dominant and normative approach - an approach limited due to discounting planning practices, internalised values and beliefs, and which under-appreciates the significance of institutional and external barriers.

As a starting point for discussion and to account for potential terminology issues, a working normative mobility definition borrows from the sustainable literature to formulate a working

definition of sustainable transport (Banister, 2005; Cervero, 1998; Newman & Kenworthy, 1999; Vuchic, 2000), defining such a system as one that:

- Maintains or enhances economic & social functions
- Consumes fewer physical resources (eg: fuel and land)
- Reduces user costs (eg: time and money)

The aim of conceptualising transport planning through a normative framework is to place emphasis on professional transport planners. Unravelling why transport planners aren't doing what "others" believe they should be doing, or are doing something but inefficiently, incorrectly, or slowly, presents a complex intellectual puzzle. Building on current new theories of mobility (Urry, 2007) and more recent work related to "path-dependent and institutional inertia" (Low & Aste, 2009), the normative mobility framework as discussed in this paper seeks to understand the values, beliefs and practices of professional transport planners and how institutional arrangements are perceived by the actors. Although intellectually and empirically interesting and useful, debates such as land-use and transport integration, best practice, and travel behaviour can often clutter what appears to be a complex issues in of itself, that of transport planning practice. To assist in developing a normative mobility framework, the proposed research borrows from two different yet compatible theoretical strands: practice theory and normative theory.

Building from the idea that the built environment and associated transport system reinforce and reproduce social practices - transport planners are uniquely positioned to be both shaped by such systems while simultaneously shaping new practices through the act of planning future transport projects. Giddens provides a useful starting point in which to explore how practices are socially constructed and governed by rules that are organised and reproduced by social practices.

Although receiving interest in other fields, Giddens's structuration theory has received almost no interest in the field of urban and transport planning. However, "[p]ractice theory – as it is

exemplified in authors such as Bourdieu, Giddens, late Foucault, Garfinkel, Latour, Taylor or Schatzki – is a type of cultural theory” (Reckwitz, 2002, p. 245), which builds on Giddens’s work and which has generally received more interest in the field of sociology. Messner, Clegg, and Kornberger (2008) write that the recent emergence of practice theory in sociology is primarily due to an increasing concern with more structural theories and accounts “of competing rationalities” that can often be overly determinist (Messner, Clegg, & Kornberger, 2008, p. 70). Although practice theory is more commonly associated with household practices, it provides a useful method of inquiry in which to consider and explore the practice of transport planning.

Practice theories hold that agency is always bound to sets of available practices with which actors make sense and thus to the structural features of the social system, made up of a set of situated social practices, possible vocabularies of motive, and members’ categorization devices for interpreting them (Messner, et al., 2008, p. 70).

Whether incorporating practice theory into the above discussion is appropriate and/or helpful will be developed further as part of an on-going PhD Higher Degree by Research project that the author is currently conducting. While practice theory is a more recent theory, the idea of normative planning is a much older discussion.

Klosterman (1978, 1983) states “planners often have strongly felt personal or widely shared professional views on public issues such as the desirability of mixed housing and regularly attempt to get their views enacted at the local, state, or even national level” (Klosterman, 1978, p. 39). Instead of remaining silent on such views, Klosterman argues merging the two conflicting perspectives - the logical empiricist planner concerned with developing rationale policy, and the social policy activist concerned with the greater good as defined by both themselves and the larger society. Klosterman concluded that by embracing a normative

planning perspective, planners could combine their dual commitment to scientific rigor and social reform when defining public policy objectives.

Not only would this approach provide a rational basis for planners' ethical positions, it would also unite planners' political and scientific roles, expanding the scope of the latter. Under this approach planners would no longer rely merely on pragmatic politics and claims to professionalism to promote their proposals, but rather, would attempt to defend them on rational grounds (Klosterman, 1978, p. 44).

More recently, normative planning has re-emerged in the urban design discipline. Responding to a 'postmodern pessimistic wave', Alfasi and Portugali (2007) state a primary reaction in urban planning rests on the stance that since science "is incapable of controlling society and space, it is pointless for planning to attempt it" (Alfasi & Portugali, 2007, p. 168). Talen and Ellis (2000, pg. 37) postulate that there are durable, time-tested truths and discoveries that have been (and continue to be) made about urban form." The authors maintain that "normative principles are prevalent in current planning — they have simply failed to be explicitly interwoven into a coherent theory of good city form" (Talen & Ellis, 2002, p. 42). If planners implemented a normative theory, they would be forced to contend with "the complexities of aesthetic, ethical, and political theory to secure its foundations,... [instead of relying] solely on empirical evidence from the social and natural sciences" (Talen & Ellis, 2002, p. 38).

Sternberg (2000) agrees with Talen and Ellis, but contends that such a robust theory faces major challenges. Sternberg's most pertinent challenge outlined that most directly relates to the current discussion states theory should accomplish what any good theory does, "direct our attention to pertinent features of reality — in this case, experiential features of space and built form — and thereby to help guide practice" (Sternberg, 2000, p. 266). Given the inextricable

link between movement and space, this paper argues that any such theory should therefore also contain elements that prescribe time-tested truths about travel, transportation, and mobility.

Conclusion

This paper presents a starting point of research derived from a literature review as part of an on-going PhD Higher Degree by Research project that the author is currently undertaking. Findings from the literature review revealed two findings: 1) an over-emphasising of the built form's ability to alter travel behaviour which under-emphasises the role of transport planner, which feeds into 2) an under-appreciating the crucial role that integrating various transport modes together might play towards achieving more sustainable transport outcomes. These findings have led to the belief that attention should be placed towards developing a normative mobility framework instead of continuing to devote significant energies in measuring and analysing travel behaviour. This paper has attempted to demonstrate that when conducting empirical studies into travel behaviour, concern should not only be grounded in understanding "the relationship between urban form and travel behaviour", but more importantly, in "providing an understanding of the how and the why of that relationship. So far, researchers have done a better job of the former than the latter" (Handy, 1996a, p. 152). Therefore, this paper situates itself within the current transport planning debate by enquiring into the underlining values and beliefs internalised by professional transport planners, and how such values and beliefs play out against institutional and practical constraints planners face daily during their attempts to develop transport systems in a more sustainable manner.

Table 1: Summary of Travel Behaviour Literature

	Theory	Study Area	Method/Data	Mode/Duration	Environmental Variables	Social Variables	Study/Aim Measurement	Primary Debates
Transport Planning (Engineering)	<u>Economics</u> Utility Demand Discrete Choice Activity-Based	<u>Aggregate</u> Neighbourhood Community City, State Regional, Country	<u>Simulation</u> Descriptive Multivariate Statistical	<u>Mode</u> Walk Bike Other Car Public Transport	3 Ds Spatial Characteristics Infrastructure Type Availability Location Geography Natural terrain Compare/contrast	<u>Individual</u> Income Education Married/Children Age Work Status Employment	Connectivity Accessibility Walkability Congestion Self-selection Disadvantaged Aesthetics Economy	Environmental Determinism Travel Time Budget (TTB) Positive Utility Induced Demand Sustainability
Urban Planning & Design	Incorporate different disciplines	<u>Disaggregate</u> Individual Household	<u>Quantitative</u> Census SpecificData Collection Source Travel Diaries Surveys	<u>Duration/Length</u> Trip Quantity Quality Linking		<u>Ownership</u> Car Bike Home		
Transport & Time Geography	<u>Time-Geography</u> Activity-Based Outcome of choices Travel behaviour based on constraints		<u>Qualitative</u> Household and/or individual interviews	<u>Reason</u> Commute Personal Recreation Shopping Other				
Health	Active Living		<u>Quan/Qual</u>				Obesity Physical Activity Active Living Safety	
Psychology	Cognitive Mapping Differentiation-consolidation Decision Field Attitude Habituation Planned Behaviour	<u>Disaggregate</u> Individual Household					Place Attachment Attitudes Liveability Habit/Norms Preferences Environmentalism	

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