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Developing and testing a framework for the assessment of neighbourhood liveability in two contrasting countries: Iran and Estonia

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ABSTRACT

A growing body of evidence indicates that the environmental quality of residential neighbourhoods has an impact on their liveability. It can be a contributory factor to the prosperity and development of cities because it reflects the real-life experiences of residents and can also affect the attractiveness of a city for well-qualified workers. A liveable neighbourhood can help to improve the quality of life of residents, which is one of the determining factors in creating a socially sustainable urban environment. This research aimed to develop a practical method for assessing the liveability of a residential neighbourhood, tested in two contrasting countries, Iran and Estonia. We developed and tested a set of criteria based on the principles and attributes of liveability obtained from the literature and we used a Delphi survey of Iranian and Estonian urban planning and design experts to identify which of the candidate criteria were most appropriate to each country together with their priority weighting. The results showed that while many of the same criteria applied to both countries, the importance of them varied, in part reflecting environmental differences such as climate and day length. The method has potential for use in the development of indicators of liveability as part of urban sustainability assessment.

1. Introduction

1.1. Liveability

A growing body of evidence indicates that a range of aspects associated with built environments have an impact on liveability (Appleyard, 1981; Capon, 2005; Golkar, 2007; Jacobs, 1961; Khastou and Saeidi Rezvani, 2010; Morais and Camanho, 2011; Paumier, 2004; Wells et al., 2007). Liveability can be defined as the quality of life as experienced by the residents of a neighbourhood within an urban area (Bray, 2010; Evans, 2002; Higgins and Campanera, 2011; Mulligan and Carruthers, 2011; Omuta, 1988; van Kamp et al., 2003). Some authors consider the concept of liveability to be difficult to define and measure (Wheeler, 2001; Balsas, 2004). Existing descriptions of what constitutes liveability may include a range of different issues underpinned by a common set of guiding principles such as accessibility, inclusiveness (Oberlink, 2006), equity, safety, continuity (Lynch, 1998) and participation. The design, maintenance and use of built environments, the availability and proximity of public spaces, effects of the urban microclimate, aesthetic qualities of the landscape, presence of vegetation and greenery (Li et al., 2006; Niemelä et al., 2010; Rotem-Mindali, 2012; Tian et al., 2014; Viegas et al., 2013), the accessibility of parks and other public open spaces and the perceived safety of an area (Leby and Hashim, 2010; Hunter New England Population Health, 2012) have all been advanced as important environmental influences on liveability.

Many of the above factors can also be linked to the concept of ecosystem services (Millennium Ecosystem Assessment (MA), 2005). These services may be obtained from either natural or cultural elements of ecosystems (including urban ecosystems), or some combination of both. The kind of services can be categorised as some provisioning and regulating services, such as provision of shade or purification of water and air by urban green elements

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but those connected to liveability are mainly cultural ecosystem services such as aesthetic and recreational benefits. The relevance of considering human-social values when studying urban ecosystem services has been highlighted by several authors (Grimm et al., 2000; Zipperer et al., 2000; Kinzig and Grove, 2001; Li and Wang, 2002; Yli-Pelkonen and Niemelä, 2005; Tzoulas et al., 2007; de Groot et al., 2010) and when planning urban systems with relatively few natural elements the broader meaning remains valid (Wallace, 2007).

Liveability is thus a broad term encompassing a number of characteristics of urban environments affecting their attractiveness as places to live. Indicators of liveability may have a potentially more important role in assessing urban sustainability and can be used in checking the effects of changes to the urban environment.

Potential measurement criteria for any criterion or indicator used in the assessment of environmental conditions can be classified as either "objective" or "subjective". Objective criteria generally refer to quantitative data and the majority can be described using various statistics (e.g. percentage of homes vacant in a neighbourhood, the average distance from home to a public green space, amount of green space per inhabitant) (Angur et al., 2004; Islam et al., 2009; Mearns, 2012). These types of criteria have been widely used because they are seen as being more rigorous (e.g. traffic volume and noise) (Riedel et al., 2013). Subjective criteria are based more on personal feelings, perceptions and attitudes, and are usually qualitative in nature (Tsaur et al., 2006). They rely more on factors perceived to be important by residents themselves. They may also incorporate factors which are not directly affected by the built environment and which may be outside the control of planners, for instance, such as the "neighbourliness" of the people living there. Experts in urban planning and design may provide a middle way of identifying factors as a result of their training in objective factors combined with their experience of working with urban communities and therefore familiarity with more subjective factors.

Among urban design and planning agencies where the strategic focus is on the creation and development of "liveable" neighbourhoods the opinions and perceptions of local residents are increasingly being used to identify factors affecting the liveability of a particular place. However, more objective criteria might be more important where public participation is poorly developed or when it is necessary to link the perceptual aspects expressed by the local people to more measurable factors which can be manipulated through planning instruments and design guidance. Experts are trained in theoretical and legal aspects about landscape and urban planning and if they are also practitioners they normally develop a wealth of experience on the ground and can effectively work using a blend of knowledge and experience. However, this practice-based experience (Atchison et al., 2006) is rarely recorded or accumulated, so that it is largely invisible to policy makers or researchers, becoming a kind of tacit knowledge which if captured more formally can be of real benefit. Thus, surveying and collecting the opinions of experts on a range of topics and calling on their experience to validate or reject theoretically-developed criteria in order to make them more directly useable in real life can be a very valuable reality check. Megill (1992) stated that reality checks enable us to check experience against assumptions for logical fits.

The objective of the research presented here was to test candidate criteria for measuring neighbourhood liveability obtained from the research and theory literature among experts from two countries. The research question asked: is it possible to identify common criteria which apply regardless of the location and context of an urban neighbourhood, or are there aspects which are location specific? In this study we sought to identify key criteria for building liveable urban neighbourhoods in two very different countries, Iran and Estonia. These were chosen for their contrasts in climate, degree of urbanisation, traditional and recent urban forms and quantity of green areas as well as their socio/cultural conditions. Table 1 summarises the contrasts between the two countries.

The Delphi method was adopted as being the most suitable approach to meeting the research objective (Manoliadis et al., 2006; Ng et al., 2013). It should enable candidate criteria to be identified and tested for their suitability for coping with locational differences while enabling local expert input to the formation of a standardized set. Determination of the liveability attributes could also provide the content for indicator development by breaking them down into measurable factors. This study used subjective measures to explore experts' opinions directly, thus making the basis for assessing liveability more operational when assessing it together with residents of neighbourhoods such as via a questionnaire or when comparing objectively measurable criteria with the results of a questionnaire.

1.2. The Delphi method: Theory and general characteristics

The Delphi method is widely used for gathering data from limited numbers of respondents from a specific domain of expertise and is designed as a group communication process aiming to achieve a convergence of opinion on a specific real-world issue (Dalkey, 1972; Hsu and Sandford, 2007; Linstone and Turoff, 1975; Lindeman, 1981; Ludwig, 1994; Young and Jamieson, 2001). As stated by Miller (2006), surveys usually try to identify "what is," whereas the Delphi technique attempts to address "what could/should be".

The Delphi technique can be applied in the following areas (Linstone and Turoff, 1975; Yousuf, 2007):

- Exploring urban and regional planning options.
- Distinguishing and clarifying real and perceived human motivations.
- Exploring priorities of personal values, social goals, etc.

The feedback process is an integral part of the Delphi method. The results of the first iterations are re-evaluated and modified by respondents in later stages after reviewing and assessing the comments and feedback provided by the other Delphi experts (Dalkey, 1967). The method is also set up to ensure anonymity to respondents. The feedback process is controlled by the administrator and a number of statistical techniques can be used to interpret the data (Dalkey, 1972; Ludlow, 1975; Douglas, 1983; Hsu and Sandford, 2007).

As iterations proceed, respondents or panel members usually offer their opinions with more insight. Several studies have shown that the practical number of rounds or iterations usually needed is between two and three (Mitchell, 1991; Gallego et al., 2008) in order to reach consensus. The rounds generally proceed as follows:

Round 1: The Delphi method traditionally begins with an open-ended questionnaire which is used to obtain specific information about a content area from the experts (Custer et al., 1999) the responses to which are converted into a structured questionnaire for the second round. It is a common modification however, to use a structured questionnaire based upon an extensive review of the literature in Round 1 instead and this is what was used in the present study (Kerlinger, 1973).

Round 2: Each participant receives a second questionnaire (or the first questionnaire derived from the literature review) and is asked to review the items, to rate them or to put them in rank order so as to establish provisional priorities among them. As a result of this round, areas of disagreement and agreement are usually identified (Ludwig, 1994; Jacobs, 1996).

Round 3: Each participant receives a further questionnaire that includes the items and ratings summarized from the previous round and is asked to revise their judgments or "to specify the