Journal of Construction in Developing Countries, Vol. 15(1), 67–91, 2010

Liveability Dimensions and Attributes: Their Relative Importance in the Eyes of Neighbourhood Residents

*Jasmine Lau Leby and Ahmad Hariza Hashim

Abstract: It is important for a neighbourhood to provide a quality and good environment to ensure that inhabitants are able to live their lives in a satisfying way. There have been few attempts to investigate people's perceptions about the places they currently live, especially what makes their neighbourhoods a good or bad place to live. Thus, this study aims (1) to identify the attributes and the dimensions that residents consider in evaluating the liveability of their neighbourhood and (2) to assess the importance of these attributes and dimensions. A literature review found that four dimensions are used in most studies to understand the liveability issues: social, physical, functional and safe. Sixteen attributes are also identified to be indicators for the four dimensions. The study was conducted in one of the neighbourhoods in the Subang Jaya Municipal Council vicinity, and data were collected using mailed questionnaires. A total of 170 questionnaires were completed and returned, which represented a 57% response rate. Results revealed that residents are most concerned about safety, while social issues are deemed to be the least important factor. Thus, efforts to promote neighbourhood liveability should be focused on ensuring the overall safety of the community by incorporating a design that creates territoriality and allows more surveillance. Neighbourhoods should be maintained to avoid incivilities to reduce the fear of crime and crime itself.

Keywords: Liveability, Neighbourhood, Dimensions, Indicators

INTRODUCTION

Malaysia has experienced rapid urbanisation for the past 15 years, and this has led to significant pressure on local and state governments to provide land for development and infrastructure as well as housing for growing urban populations (Yuen et al., 2006). The latest national statistics are shown in Table 1. The total population of Malaysia in 2000 was 23.49 million, and it is expected to grow to 28.96 million by 2010. This gives an average annual population growth rate of 2.3%, which is slightly lower than that of the Eighth Malaysian Plan. With respect to urbanisation, it was observed that the proportion of urban population is projected to increase to 63.8% in 2010 from 62.0% in the year of 2000. The rates of urbanisation in Kuala Lumpur, Selangor, Pulau Pinang, Melaka, Johor and

Faculty of Human Ecology, Universiti Putra Malaysia, Serdang, Selangor, MALAYSIA
*Corresponding author: ljasminelau@yahoo.com

Labuan were higher than the national urbanisation rate, mainly because of the vast commercial and employment opportunities. Such a rapid urbanisation rate requires planning and development that is socially beneficial for all residents with sufficient and optimal infrastructure, utilities, public facilities, recreational spaces and commercial centres. This is in line with the Ninth Malaysia Plan (Government Malaysia, 2006) in which the urban development strategies are intended to improve the quality of urban services to ensure that urban areas are more liveable and that their residents enjoy a higher quality of life.

Neighbourhoods have always served as an important tool for the planning and analysis of urban areas. Public administrators have frequently divided the city into neighbourhood units to organise the distribution of goods, services and other resources. The importance of a neighbourhood in a resident's life has attracted numerous studies (Myers, 1987; Omuta, 1988; Veenhoven, 1996; Lee, 2005), which utilise various terms to denote the meaning of good living conditions. One of the commonly used terms is liveability. It is a concept that results from the interaction between the community and its environment (Shafer et al., 2000). In essence, it focuses on a subjective evaluation of the residents toward their living environment. Jarvis (2001) maintains that liveability encompasses elements of a home, neighbourhood and metropolitan area that contribute to safety, economic opportunities, health, convenience, mobility and recreation. Werner (2005) summarises that liveability is not only related to spatial housing and urban qualities, but also includes quality of community life. The dynamic urbanisation wave makes it increasingly difficult to ignore the perspective of liveability. The liveability of neighbourhoods is a crucial element to the prosperity and development of cities because it reflects the real-world experiences of inhabitants.

Various researches have relied on residents' experiences as a measurement of neighbourhood quality because the human-built topography of neighbourhoods greatly impacts residents' social and psychological wellbeing. Thus, the residential environment has become one of the most important factors that influence consumer choice and property selection (Visser et al., 2005). Because of the wide geographical area in an urban setting, a residential environment that is able to satisfy the daily demand of inhabitants is desired. Therefore, it is crucial for urban planners and cities administrators to be interested in the things that are important to people that allow them to live satisfying lives. In other words, to achieve a competitive advantage, any neighbourhood must ensure that its overall 'appeal' and the offered living experience are superior to that of the alternative locations open to potential inhabitants. There is a growing awareness of the deterioration of liveability, particularly in urban

Table 1. Population and Urbanisation Rate by State, 2000–2010

State	Population (million)			Urbanisation rate (%)			Average annual growth rate of urban population (%)	
	2000	2005	2010	2000	2005	2010	8MP	9MP
Northern Region								
Kedah	1.67	1.85	2.04	39.1	39.8	40.3	2.4	2.2
Perak	2.09	2.28	2.44	59.1	59.3	59.3	1.6	1.6
Perlis	0.21	0.23	0.25	34.0	35.1	35.9	2.2	2.2
Pulau Pinang	1.33	1.50	1.60	79.7	79.8	80.0	2.0	1.9
Central Region								
Melaka	0.65	0.72	0.79	67.5	70.6	73.4	2.9	2.7
Negeri Sembilan	0.87	0.96	1.03	54.9	56.3	57.4	2.3	2.1
Selangor	4.19	4.87	5.31	87.7	88.4	89.1	2.7	2.4
W. P. Kuala Lumpur	1.42	1.62	1.70	100.0	100.0	100.0	1.9	1.5
Southern Region								
Johor	2.76	3.17	3.46	64.8	66.5	67.7	2.9	2.6
Eastern Region								
Kelantan	1.36	1.51	1.67	33.5	33.4	33.3	2.0	2.1
Pahang	1.30	1.45	1.57	42.0	43.5	44.6	2.7	2.5
Terengganu	0.90	1.02	1.12	49.4	49.8	50.3	2.6	2.6
Sabah	2.60	3.13	3.33	48.1	49.8	51.6	3.1	2.9
W. P. Labuan	0.08	0.09	0.09	76.3	77.6	78.6	2.2	1.8
Sarawak	2.07	2.34	2.56	48.1	49.5	50.6	2.8	2.4
Malaysia	23.49	26.75	28.96	62.0	63.0	63.8	2.5	2.3

Source: The Ninth Malaysia Plan Report, Table 17-5, p. 36 (Government of Malaysia, 2006)

environments because of the pressure of rapid development and a growing population. As urban size increases (see Table 1), an imbalanced development pattern could exist: some neighbourhoods may prosper, while others deteriorate. Consequently, liveability and quality of life vary from one neighbourhood to another. Neighbourhoods also pose enormous challenges that include providing adequate urban services and amenities, alleviating urban poverty, designing new infrastructure and establishing governance systems for authorities managing cities.

A comprehensive search of the electronic works revealed that there have been limited works on understanding the issue of liveability in Malaysia. A literature review found that most scholarly activities on local urban living environments are clustered around well being (e.g., Dasimah et al., 2005; Nurizan et al., 2004b) and quality of life (e.g., Norhaslina, 2002). A majority of neighbourhood quality perception studies to date have been conducted in western countries and culture. As such, it is questionable if the data from these studies are applicable to assess residential neighbourhood quality in a local environment. Local environment quality studies are critical because they collect useful information on the local urban conditions and trends, which enables such knowledge to be imparted in formulating and implementing urban policies and programmes.

Similarly, there have been few attempts to investigate people's perceptions about the places they currently live, especially what makes their neighbourhoods a good or bad place to live. Most studies have generally focused on residents' satisfaction with their living environment (Carp and Carp, 1982; Turkoglu, 1997; Savasdisara, 1998; Parkes et al., 2002; Dekker et al., 2007) and rarely on the attributes or dimensions that are important to them. As mentioned by Garcia-Mira et al., (1997), a person's responses to physical and social environmental stimuli are 'coded' subjectively on internal scales in the individual's mind. They further elaborated that most perception studies take this for granted by assuming that all individuals will accord the same importance to the underlying attributes or dimensions. St. John and Clark (1984) in their studies have reviewed various authors' studies, and they agree that not everyone finds the same characteristics to be important in their neighbourhood or evaluates neighbourhood satisfaction on the basis of the same criteria. Thus, it is the aim of this study to identify the attributes and the dimensions that residents consider in evaluating the liveability of their neighbourhood and to assess the importance of these attributes and dimensions.

UNDERSTANDING LIVEABILITY

Like neighbourhoods, most researchers have reported liveability as a concept that is difficult to define and

measure (Wheeler, 2001; Balsas, 2004; Heylen, 2006). The term liveability is an umbrella to a variety of meanings, which depend both on the objects of measurement and on the perspective of those making those measurements. Heylen (2006) revealed that there has been no agreement in the literature concerning the dimensions that should be incorporated to capture the concept. Such discrepancy in views is common because researchers differ in their background discipline. Thus, liveability is used in various studies, ranging from different scales of individual, neighbourhood and country to multiple disciplines, such as ecology, geography, sociology and urban planning.

According to Heylen (2006), liveability refers to the environment from the perspective of the individual and also includes a subjective evaluation of the quality of the housing conditions. In a simpler form, liveability encompasses the characteristics of urban environments that make them attractive places to live (Throsby, 2005). He pointed out that such characteristics could be divided into tangible features, particularly with regard to the availability of public infrastructure and intangible features, such as sense of place, local identity and social networks. In the context of urban renewal, Throsby emphasised the role of cultural capital in improving the liveability of urban environments.

In Balsas's (2004) work on city-centre regeneration, liveability has come to mean the ability of a centre to maintain and improve its viability (the capacity to attract continuous investment) and vitality (to remain alive). Endorsing Lynch's (1998) five dimensions of good city form (vitality, sense, fit, access and control), Balsas added viability because he argued that a city centre might not be a liveable place without it. He further elaborated that a liveable place should be safe, clean, beautiful, economically vital, affordable, efficiently administered, have good functional infrastructure, include interesting cultural activities, contain ample parks, maintain effective public transportation, support broad opportunities for employment and provide a sense of community. All these factors parallel Wheeler's (2001) definition of liveability as the quality of being pleasant, safe, affordable and supportive of human community. A thorough look at the elements mentioned by Wheeler indicates the similarity among the components. Table 2 summarises the various components that contribute to liveability.

Table 2. Summary of Various Elements Used in Defining Liveability

Throsby (2005)	Balsas (2004)	Wheeler (2001)
Tangible [The existence of public infrastructure (public spaces, urban transit, availability of health and education, services, clean air and water, sanitation, water disposal system)] Intangible (sense of place, a distinctive local activity, well-established social networks)	Safe Clean Beautiful Economically vital Affordable to diverse population Efficiently administered Functional infrastructure Ample parks Effect public transportation Interesting cultural activities Sense of community	An attractive, pedestrian-oriented public realm Low traffic speed, volume & congestion Decent, affordable, well-located housing Convenient schools, shops & services Accessible parks & open space A clean natural environment Diverse, legible & educative built landscapes Places that feel safe & accepting to all users Places that emphasise local culture, history & ecology Environments that nurture human community & interaction

Vergunst (2003) introduced a liveability framework (see Figure 1) in his study on rural inhabitants in Aspinge, Sweden. The framework revealed that liveability is made up by the interactions between five variables: local inhabitants, community life, service level, local economy and physical location. For the local inhabitants, their number, demographic structure (age and sex) and lifestyle are among the important factors. Next, inhabitants, while service level refers to communication, schools, homes for the elderly, and shops. The local economy represents the ability of a place to generate income and employment, and lastly, physical location describes the landscape and buildings in the area. Vergunst's categorisation of liveability research into five main variables highlights the contingency of the meaning of liveability, which depend on the interests and perspectives of the researchers or participants who might emphasise different interrelationships of the framework. He suggested that this framework should be viewed as a heuristic model to enable different communities to discover and explore the perspectives in a wider context.

DIMENSIONS AND INDICATORS OF LIVEABILITY

Another crucial consideration concerns the aspects of the environment to be measured. The living environment experienced by inhabitants can be depicted from various

perspectives, each representing a different facet of their lives. Lynch (1998) was among the first to examine the criteria of a good settlement. A good settlement is a place that is responsive to the human context as well as connects human values to actions that affect the spatial, physical city. He also proposed a normative theory that connects statements about how a city works with statements about its goodness. Defining a good settlement is the core concern to understanding liveability and is also crucial for achieving liveable places.

Lynch's theory is based on a set of performance dimensions for the spatial form of cities that are built on the foundational values of continuity, connection and openness. The process of identifying appropriate performance characteristics uses three selection criteria. First, fundamental, physical human constraints and needs are considered. Second, the cultural practices and habits that linked to a particular location. The third requirement is that the characteristics must have the qualities of 'dimensions', which do not presuppose values or 'standards'. According to Lynch, dimensions are performance characteristics that measure an attribute against a human purpose. Imbedded in the dimensions is acknowledgement that they support a set of general human values and needs. Dimensions are interconnected and mutually supporting. They measure on a scale, for example, from zero to one, few to many, or high to low. The five basic dimensions are vitality, sense and perception, fit, access and control and ownership.

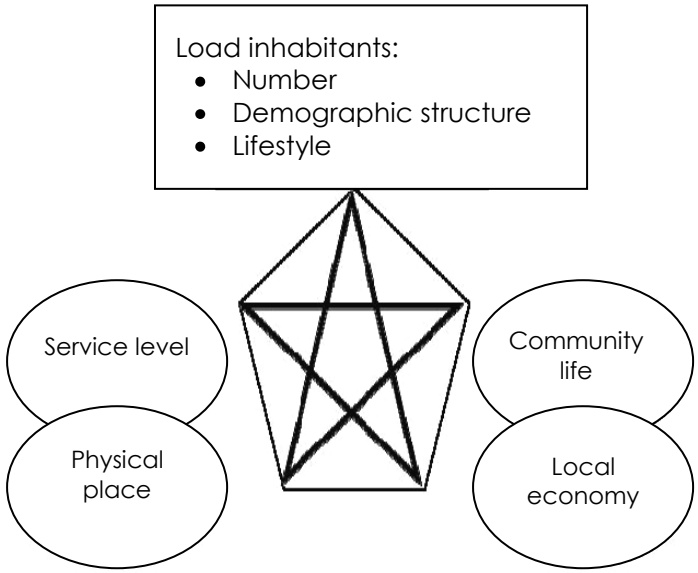

Figure 1. Framework of Liveability (Vergunst, 2003)

Generally, the chosen dimensions will vary depending on the discipline, culture and objectives of the researchers (van Kamp et al., 2003; Pacione, 2003). Omuta (1988), in his attempt to measure the objective and subjective quality of life to determine the liveability of various neighbourhoods in Benin City, utilised five broad dimensions: employment, housing, amenities, nuisances and socio-economic factors. Most of these are used as sub-themes in studies related to environmental quality and property price. For instance, some of these appeared in a Holt-Jensen (2001) study to improve a deprived neighbourhood. The four factors considered by residents to be important for a good living location are aesthetics, functionality, social relations and individual factors. Heylen (2006) draws our attention to four dimensions of liveability that are often observed in Flanders and the Netherlands, namely quality of the dwelling, quality of the physical environment, quality of the social environment and neighbourhood safety. Some of the dimensions are used by Visser et al., (2005) to show their influence on house price in the Netherlands. The attributes are grouped into four dimensions: the physical characteristics of the house, the physical characteristics of the residential environment, the social characteristics of the residential environment and the functional characteristics of the residential environment. In another study that reports on the liveability of cities in England, the researchers have four key liveability themes as well as their indicators. These themes are environmental quality, physical location quality, functional place quality and safer places. Table 3 shows the liveability dimensions used in five selected studies.

A glance at the various studies found that several liveability dimensions, such as functional, physical and social environments, are selected in all cases, which reflects people's common understanding of living environment quality. In addition, housing and safety are also widely used in most studies. This study focuses on the liveability of urban neighbourhoods; thus, the housing dimension was excluded from the analysis. Four dimensions of functional, physical, social and safety are used to

Table 3. Liveability Dimensions Defined in the Selected Studies

Omuta (1988)	Holt-Jensen (2001)	Visser et al (2005)	Heylen (2006)	ODPM (2006)
Employment	Aesthetics of living environment	Housing	Dwelling	Environment quality
Housing	Personal	Social environment	Social environment	Physical environment
Amenity	Social relations	Physical environment	Physical environment	Functional environment
Educational	Functional	Functional	Safety	Safety
Nuisance				
Socio-economic				

Note: ODPM is "Office of the Deputy Prime Minister"
Source: Office of the Deputy Prime Minister, (2006)

analyse liveability that are deemed to be relevant to neighbourhood environments. It should be noted that these dimensions might not have exactly the same content and meaning as those used in other literature, even though the same term might be used.

Determination of the liveability dimensions provides the content for indicator development by breaking the dimensions down into measurable elements. These indicators should be able to collectively describe the most important dimensions of the environment where people live and work. Newton (n.d.) considers each indicator as a kind of small model in its own right by simplifying a complex subject to a few numbers that can be easily grasped and understood by policymakers and the public. For each of the identified liveability dimensions, the following section reviews those objective measures that have been suggested in the literature. The primary objective of this review is to find the common criteria of each domain addressed in those studies, from which preferable candidate indicators can be suggested for this research.

Social Environment Indicators

Indicators for this category measure the status and relationships of various social elements. Most of the referred studies focus on the elements of community life and social contact. Neighbours' behaviour in terms of nuisance is also another concern, though in Omuta's study, it is a separate dimension. Another dimension that could be included is the sense of place experienced by the neighbourhood inhabitants because research has shown that it is related to satisfaction. As for local studies, some of the social indicators that are included in a satisfaction study in urban environments are neighbours' and friends' moral support (Dasimah et al., 2005), relationship with neighbours (Nurizan et al., 2004a, c), mutual aid and aid rendered (Nurizan et al., 2004b).

Physical Environment Indicators

The physical environment is the space where people work, live and develop social networks. People are active in the space, use and interact with this space, and also perceive the space. The conditions of the space are external factors, but they have positive or negative impacts on people's perception and feeling. Most studies emphasise the natural environment of communities, which focuses more attention on the availability and quality of parks and green spaces. A few of them take into account the environment quality, such as pollution, litter, noisiness and congestion, as well as building maintenance. In Heylen's (2006) work, the availability of amenities and services are placed under this dimension, whereas Omuta (1988) tends to separate them.

However, it is decided that this item should be included in the functional dimensions, following the categorisation of most studies reviewed. A similar scenario was seen in Malaysian studies in which some of the physical and functional indicators are given different labels (e.g., traffic conditions, school facilities, health clinic facilities and recreational facilities) and grouped under the heading of social and public facilities (Osman et al., 2004; Nurizan et al., 2004a)

Safety and Crime Indicators

Safety is an important basic need, which is reflected in the fact that everyone desires to live in a crime-free and safe neighbourhood. A neighbourhood with a high crime rate will result in an unsafe environment that imparts fear and worry among its residents. It is impossible to bring about a good quality of life in an area with a high crime rate, even if other living conditions are satisfactory. In Savasdisara's (1998) study, safety and security are found to be the dominant predictors in explaining satisfaction with the general living conditions in Japanese urban communities. Safety dimension indicators are used to measure a neighbourhood's safety level. They can be grouped into three types: the frequency of different types of crime (homicide, property crime and sexual assaults), incidents of injuries or accidents and feelings of security.

Functional Environment Indicators

As mentioned by Holt-Jensen (2001), the functional indicators imply that well-being depends on good provision and location of communication systems, shops, kindergartens, shopping centres, clinics, schools and other services. The private and public provisions of services are important when local people evaluate the quality of life in their neighbourhood. Another important factor in this dimension is believed to be accessibility. Here, the indicators gauge public transport facilities and highways.

From an economic perspective, employment is the most important component that contributes to quality of life because it provides the source of income or economic base for people's lives. Therefore, the third indicator identified for this dimension is employment. Though not many studies include it as an indicator, employment opportunities are an important means for people to develop social networks and be involved in societal activities. For many, employment may also bring them psychological satisfaction in terms of providing an opportunity to demonstrate their abilities and have a feeling of achievement.

The indicators that describe each dimension can be organised by themes as in Table 4. This structure provides clearer organisation and a better frame of the indicators.

Table 4. Summary of Liveability Dimensions and Indicators

Liveability dimension	Theme
Social dimension (social relations)	behaviour of neighbours (nuisance)
	community life and social contact
	sense of place
Physical dimension (residential environment)	environment quality
	open spaces
	maintenance of built environment
Functional dimension (facilities and services)	availability and proximity of amenities
	accessibility
	employment opportunities
Safety dimension (crime and sense of safety)	number of crime
	number of accidents
	feeling of safety

METHODOLOGY

Population and Sampling Plan

This study was undertaken in Selangor, one of the most urbanised states (approximately 89% in 2005) situated in Peninsular Malaysia, with a population of about 5 million (Government Malaysia, 2006). The target theoretical population of this study is comprised of residents who are presently staying in double-storey terrace units in Selangor. A multi-stage sampling method was adopted in which several rounds of cluster sampling were carried out prior to establishing the accessible population. Because all neighbourhoods are located under the administration of municipalities, this formed the base for further selection of samples. Among the twelve municipalities in Selangor, the Subang Jaya Municipal Council (MPSJ) was chosen randomly, followed by the selection of Bandar Putra Permai. The accessible population was made up of all 300 residents of a double-storey link located in Taman Pinggiran Putra Seksyen 2 that was drawn randomly from the list of neighbourhoods in Bandar Putra Permai. Based on the table put forth by Krejcie and Morgan (1970), it is found that a minimum sample size of 169 is required. In collecting the data on neighbourhood liveability, questionnaires were mailed to all the households. Before the questionnaires were distributed to the subjects, a pilot test was carried out. A pilot study with ten respondents was conducted to test the practicability and communicability of the questions. Changes to the survey were minimal and involved clarifying unclear items by inserting parenthetical examples and omitting some questions based on the Cronbach's alpha coefficient.

Survey Instrument

The questions were formulated using a quantitative scale with which respondents were asked to express the importance of indicators under each of dimension on a five-point Likert style response scale (1 for "unimportant" and 5 for "very important"). Apart from this, the questionnaire also contained demographic questions that included the respondent's age, ethnicity group, gender, income, household income, education level, employment status, tenure status and length of residency in the neighbourhood. Among them, open-ended questions were used to gauge information on respondents' age, income, household income, length of residency and number of family members. The results obtained were re-coded into various categories to facilitate statistical analysis.

Data Collection Method

Survey questionnaires were mailed to potential respondents based on the unit number given by MPSJ. Each of them was attached with a 'mailing number' so that it would be easier to identify those who responded twice. For each questionnaire, a cover letter was also attached to describe the study and its purpose as well as to assure respondents of anonymity and confidentiality. It also stressed the need for the respondents to fill in the questionnaires independently and not to discuss the content with others before or while completing the questionnaire. This was to ensure that the information provided was as honest as possible.

RESULTS

Respondents' Personal Characteristics

From October 2007 to February 2008, a total of 170 questionnaires were completed and returned, yielding a 57% response rate. The sample was composed of 54.7% male and 45.3% female respondents. Their age varied between 20 to 50 years old, with an average age of 32.4 years. The respondents were predominantly Chinese (48.8%), followed by Malay (43.5%), and a substantial proportion (84.7%) of sample members had a tertiary qualification (diploma or higher). Nearly 63% of the respondents had a monthly personal income between RM2001 to RM4000, and about half of them reported a total household income between RM3001 to RM6000. Looking at the tenure status, it is obvious that most units are owner-occupied. On average, 97.6 of the respondents had resided fewer than 5 years in the neighbourhood. Table 5 summarises the socio-demographic profiles of the respondents.

Table 5. Summary of the Sociodemographic Variables

Variables	Modalities	Mean	Median	Frequency	%	Total
Sex	Male			93	54.7	
	Female			77	45.3	170
Age (yrs old)	≤ 30	32.43		62	38.0	
	31–40			91	55.9	
	> 40			10	6.1	163
Ethnic group	Malay			74	43.5	
	Chinese			83	48.8	
	Indian			11	6.5	
	Others			2	1.2	170
Educational background	Primary			0	0	
	Secondary			14	8.2	
	Pre-U			12	7.1	
	Tertiary			144	84.7	
	Others			0	0	170
Employment status	Working			158	92.9	
	Not working			12	7.1	170
Respondent income (RM)	≤ 2000		3500	21	13.0	
	2001–4000			101	62.7	
	4001–6000			34	21.1	
	6001–8000			5	3.1	161

(continued on next page)

Table 5. *(continued)*

Variables	Modalities	Mean	Median	Frequency	%	Total
Household income (RM)	≤ 3000		6000	8	5.2	
	3001–6000			79	51.3	
	6001–9000			57	37.0	
	9001–12000			10	6.5	154
Tenure status	Owner-occupied			121	71.2	
	Rented			49	28.8	170
Length of residency (yrs)	0–2	3.27		51	30.0	
	3–5			115	67.6	
	6–8			4	2.4	170

Note: The data for age, personal income, household income and length of residency are collected without any pre-categorisation. The categorisation presented above is arbitrary.

Source: The Ninth Malaysia Plan, 2006–2010 (Government of Malaysia, 2006)

Content Validity and Internal Consistency

Cronbach's coefficient alpha (a) was used to determine the internal reliability of the instrument. Measures of internal consistency estimate how consistently individuals respond to the items within a scale. A reliable instrument will yield the same result on repeated occasions across time. de Vaus (2002) and George and Mallery (2003) mentioned that the alpha value should be at 0.7 to indicate the scale is reliable. For this study, Cronbach's alpha coefficients were 0.72 or higher during the pilot test and actual study for almost all scales; only the safety dimension had a reliability marginally less than 0.7 (see Table 6).

To validate the content of the survey, the scale created in the questionnaire was reviewed by a panel that consisted of research experts in housing studies who assisted in improving and refining the questions. In addition, this procedure also ensured the suitability of the dimensions and indicators chosen.

Table 6. Summary of Reliability Test

Dimensions	Number of items	Cronbach's alpha values	
		Pilot	Actual
Social	8	0.827	0.851
Physical	7	0.841	0.742
Functional	5	0.826	0.754
Safety	6	0.719	0.654

Relative Importance of the Dimensions

Mean importance ratings of the dimensions (see Table 7) were computed by averaging the mean importance ratings of those attributes included in each dimension. The data collected from the Likert response scale can be assumed to be on an interval scale, and therefore means can be compared to determine the relative perceived importance of the neighbourhood attributes (Flynn et al., 1990). Several empirical studies have used this analysis procedure (Ting, 1995; Verma and Pullman, 1998; Lockyer, 2005). Generally, as the mean value increases, the importance of the particular neighbourhood dimension or attribute increases. Alternatively, medians can be compared if the data cannot be assumed to be interval-scaled. By comparing the mean importance ratings, the most important dimension with a mean importance rating of 4.55 was the safety dimension, and the least important

one, with a mean importance rating of 3.58, was the social dimension.

Table 7. Descriptive Statistics of Mean Importance Ratings for All Dimensions

	Mean	Std. Deviation
Safety	4.5493	0.37516
Physical	4.4135	0.44404
Functional	3.8071	0.65716
Social	3.5799	0.64744

Relative Importance of the Attributes

Table 8 shows the mean importance ratings for all safety attributes. All attributes indicate a mean score of more than 4.00 out of a possible 5 with the most critical attribute 'personal safety from crime' scoring the highest mean of 4.88. This is followed by respondents' personal safety from accidents (mean score of 4.80). Almost all respondents ranked these two attributes as either important or very important. The lowest mean scoring for this dimension is 4.01, which is the 'availability of security guards' in the neighbourhood.

From Table 9, it is seen that respondents are generally consistent in their responses to the importance of various physical attributes when determining the liveability of a neighbourhood. The mean values for all the attributes are above 4.00, which indicates that respondents perceived them as influential determinants. The highest mean score is 4.60 out of a possible 5, which is 'cleanliness and maintenance of streets'.

Table 8. Descriptive Statistics for the Perceived Importance of Safety Attributes

Attributes	Rank	Mean	Median	Std. Deviation
Personal safety from crime	1	4.88	5	0.365
Personal safety from accidents	2	4.80	5	0.402
Safety of personal property	3	4.72	5	0.500
Availability of police protection	4	4.54	5	0.556
Availability of fire brigade service	5	4.36	4	0.727
Availability of security guards	6	4.01	4	0.961

Another important attribute with a mean score of 4.58 is 'efficiency of rubbish collection service'. 'Availability of open spaces' is deemed to be the least important condition for residents, with a mean of 4.25, the lowest among all attributes in the physical dimension. Ironically, upkeep of lighting in the neighbourhood is ranked quite low relative to other attributes despite the fact that it lowers crime and fear of crime.

Table 9. Descriptive Statistics for the Perceived Importance of Physical Attributes

Attributes	Rank	Mean	Median	Std. Deviation
Maintenance of streets	1	4.60	5	0.610
Rubbish collection service	2	4.58	5	0.573
Ground vibration by traffic	3	4.50	5	0.682
Noise by heavy traffic	4	4.37	5	0.857
Maintenance of open spaces	5	4.31	4	0.818
Upkeep of neighbourhoods' lighting	6	4.29	4	0.676
Availability of open spaces	7	4.25	4	0.646

For the functional dimension, the two most critical attributes are 'easiness to get health facilities' and 'provision and proximity of schools' with mean scores of 4.26 and 4.20, respectively. More than 80% of the respondents perceived these two attributes as either important or very important. On the other end of the spectrum, 'amount of employment offered by the neighbourhood' and 'ease of finding employment in the neighbourhood' were identified as the two least important attributes by the respondents; more than 50% of them rated the two as moderately important or less. The relevant mean importance ratings were 3.33 and 3.23 out of a possible 5, respectively (see Table 10).

Table 10: Descriptive Statistics for the Perceived Importance of Functional Attributes

Attributes	Rank	Mean	Median	Std. Deviation
Easiness to get health facilities	1	4.26	4	0.766
Provision and proximity of schools	2	4.20	4	0.877
Access to shopping centres	3	4.02	4	0.767
Amount of employment	4	3.33	3	1.072
Ease of finding employment	5	3.23	3	1.091

Table 11 indicates that the most influential social attribute used in the selection of a neighbourhood is 'behaviour of neighbours' in terms of nuisance, with a mean rating of 4.08 out of a possible 5. The second most important attribute in this dimension is 'relationship with neighbours', which had a mean score of 3.85. These two

attributes are seen as critical; approximately 70% of the respondents ranked them as important or higher. The least important attribute in this dimension, with a mean importance rating of 3.22 is 'close distance to relatives'.

Table 11. Descriptive Statistics for the Perceived Importance of Social Attributes

Attributes	Rank	Mean	Median	Std. Deviation
Behaviour of neighbours	1	4.08	4	0.759
Relationship with neighbours	2	3.85	4	0.864
Sociability of people	3	3.62	4	0.879
Sense of community	4	3.56	4	1.029
Cordiality of people	5	3.53	3	0.887
Friendship with people	6	3.48	4	0.939
Close distance to friends	7	3.29	3	0.996
Close distance to relatives	8	3.22	3	1.022

DISCUSSION

This study represents a cognitive evaluation of the inhabitants on different neighbourhood issues associated with residential living environment. The findings of this study provided an understanding of residents' perceptions of the importance of different neighbourhood dimensions, as well as attributes in their housing environment. By studying a small sample of urban residents, this research supplements the limited pool of current literature by reflecting the preferences of city people with regard to the elements that need to be present in creating a liveable local environment.

Overall, the results of the Likert-Type scale questions show that residents perceive safety to be the most important factor (mean value of 4.55) that makes up a quality and good environment (see Table 7). Although Malaysia is admirably safe in most regards, crime is a major concern because street crime has increased steadily in recent years, especially in major cities Kuala Lumpur and Johor Bahru. According to "Best Food Forward" (2008), crime statistics in 2007 were hair-raising with a 13.36% increase in serious crime and 159% rise in gang robbery without the use of firearms. This has created a sense of anxiety and fear in the mind of residents and, thus, raised great concern for safety issues. When people feel unsafe, they are less likely to be involved in meaningful and active

interactions with others in the neighbourhood. Moreover, compared to those with a lower income and who are less educated, these urban middle class groups tend to establish strong external linkages, and thus, have a low degree of social interaction in the existing neighbourhood. As a result, the social dimension is perceived as the least important factor (mean value of 3.58) in determining neighbourhood liveability.

Table 8 shows that respondents are very concerned about their personal safety with respect to crime and accidents. The emphasis on these elements is due to worries about individual safety in conjunction with an increase of crime and accident cases. Data from Bukit Aman revealed that the total index crime has experienced an influx of 120% to 156,455 cases in 2004 from 70,823 in 1980 (Sidhu, 2005). In 2015, the rate is projected to reach 208,076 (Sidhu, 2006). Similarly, road accidents increased from 59,084 in 1980 to 341,252 in 2006 (Royal Malaysian Police, 2007). The availability or presence of security guards in their neighbourhood compound is deemed to be the least important safety attribute. Guards at the entrance guardhouse as well as periodic patrols give residents a sense of safety. Nonetheless, the nature of this service is more of a public good, and those who do not pay their dues obtain a free ride. This could be part of the reason residents feel reluctant in engaging the service.

As for the physical dimension (see Table 9), neighbourhood residents place great importance on proper street maintenance, as well as the efficiency of rubbish collection service, probably because exposed litter and rubbish are undesirable and tend to spread disease. On the other hand, availability of open spaces is perceived as the least important attribute in the neighbourhood physical environment. Undeniably, open spaces do offer social meeting opportunities to promote neighbourly interaction and aesthetic appearance, but according to Felbinger and Jonuschat (2006), the core problem with commonly used green open spaces is that of potential overuse and destruction of the resource. According to them, potential conflicts include noise, waste pollution (papers, empty bottles), vandalism, unintended usage (teenagers occupy children playgrounds) and unwelcome usage (non-residents use facilities that are intended for local residents). Consequently, this can impair the recreational function of open spaces and lead to low appreciation of its existence in the neighbourhood.

Turning to the functional dimension (see Table 10), it is obvious that the provision of quality healthcare and educational institutions is an essential component of a community's infrastructure because they provide employment and spur economic growth. However, the former is not the major concern of the residents because the number of jobs available and the ease with which one

can obtain employment are at the bottom of the list. The main reason behind this outcome is that these respondents already have a job elsewhere prior moving into the neighbourhood.

In terms of the social environment, annoying neighbours can be a great impediment to creating a beneficial and synergetic relationship. Annoyances include types of behaviour such as dumping rubbish and noises that may not be intended to cause harm but interfere with other people's rights to use and enjoy their home and community. Thus, it is important to have considerate and friendly neighbours that do not impinge on others' sense of privacy. Though neighbours can be a major source of annoyance, they are particularly important when speed of reaction is desirable, such as borrowing items, emergencies, illness or merely being locked out (Wenger, 1990). As key players in individuals' personal networks, proximity of neighbours and their accessibility in time of need has clearly reduced dependency on relatives as a source of support.

CONCLUSION

The findings of this study have provided a better understanding of the issues of liveability in a present modern urban neighbourhood by identifying the attributes deemed to be important in creating a healthy and comfortable living environment. Individuals that occupy a given setting may differ in their subjective assessments because liveability itself is a subjective concept. An understanding of the term needs to be approached from the perspective of the people that live in the environment. Knowledge of the subjective, human side to liveability can shed light on the situation beyond objective indicators so that planners and policy makers are better informed of residents' satisfaction and what they really need. This allows municipalities located in various growing metropolitan regions to rework their development and planning strategies by incorporating liveable community principles into their agenda. By enhancing a city living environment that caters to the needs of the community, this ensures that a neighbourhood will become or continue to be an attractive place to live, work and invest.

The analysis indicated that efforts to promote neighbourhood liveability should focus on ensuring the overall safety of the community because this tends to increase their satisfaction level. In Malaysia, the majority of the dwellings, and even the neighbourhoods, are being separated from the street by high fences. This is an expression of feeling unsafe and the distrust that residents hold toward their environment. Rather than providing more privacy and safety, such design has actually caused the street to be more detached from the residents. It is

suggested that future town planning should consider the concept of social surveillance in their design.

Apart from the formal surveillance of security guards and police, casual or informal surveillance is equally critical. The latter concerns the design of the site that allows residents to observe the activities of their neighbours and families. The process of seeing and being seen creates a sense of community, which in turn creates territoriality among its inhabitants. The ability to take control of living space and better social surveillance tend to reduce crime and the fear of crime in communities. Adding to this, neighbourhood design also impacts travel behaviour, which is important in reducing injuries and casualties due to accidents.

The creation of a walk-able neighbourhood is an example of generating more pedestrian traffic that tends to provide greater opportunities for natural surveillance. In addition to minimising residents' worries, such a design tends to improve air quality, reduce congestion and create a more liveable environment. At the same time, reduced dependency on vehicles in the neighbourhood is the first step towards environmental sustainability.

The perception of crime is greatly influenced by the way a neighbourhood is managed and maintained. Despite the absence of any true criminal activities, the presence of incivilities such as vacant lots, litter, vandalism, graffiti and rundown areas or buildings tends to generate a fear of crime. When considering a strategy to reduce the fear of crime and even crime itself, a neighbourhood must be designed with minimal unassigned space. Such ambiguous spaces are vulnerable because they allow residents and outsiders to engage in mischievous and antisocial activities. In view of this, spaces need to be clearly designated as private, public or semi-private in order to prevent urban crime.

This study provides evidence that urban policymakers should also direct their efforts to policies that promote social interaction in the neighbourhood. Though the social dimension is perceived as the least important factor in determining a place's liveability, stronger social programs are still required to assist neighbourhoods in minimising incivilities and reducing crime rates. Open space, playgrounds, parks and other landscape should be used to maximise informal contact among residents to create familiarity among individuals; this promotes a shared interest in their immediate environment. Participation in political parties, charitable activities, parent-teacher associations and recreational activities ought to be encouraged because it creates emotional attachment to their place of residence as well as joint responsibility. When people are attached to their place, it is a driving force for positive communal interaction and solid social support.

In brief, the liveability of neighbourhoods is a crucial element to the prosperity and development of cities because it reflects the real-life experiences of inhabitants. A liveable neighbourhood presents a delightful and desirable urban space in terms of equity, accessibility and participation that contributes to the well-being and development of all people (Western Economic Diversification Canada, n.d.). Thus, a liveable environment creates an optimistic future for quality and living comfort, which ultimately become the determining factors in creating a sustainable built-up environment of the whole society.

REFERENCES

Balsas, C.J.L. (2004). Measuring the livability of an urban centre: An exploratory study of key performance indicators. *Planning, Practice and Research,* 19(1): 101–110.

Best Foot Forward [Editorial]. (2008, February 16). *The New Straits Times.* http://www.nst.com.my/Current_News/NST/Saturday/ Columns/2159432/Article/ index_html (accessed 5 May 2008).

Carp, F. and Carp, A. (1982). Perceived environmental quality of neighbourhoods: Development of assessment scales and their relation to age and gender. *Journal of Environmental Psychology*, 2: 295–312.

Dasimah, O., Puziah, A. and Muna, S. (2005,). Urbanisation and the well being of female headed households in Malaysia: The case study of lower income single mothers in urban centres. Paper presented at *8th International Conference of the Asian Planning Schools Association,* September 11–14, 2005, Penang, Malaysia. http://www.apsa2005.net/FullPapers/ PdfFormat/Full20Paper20(AH)/ Dasimah.pdf (accessed 15 January 2008).

Dekker, K., Musterd, S. and van Kempen, R. (2007). Explaining differentials in housing and neighbourhood satisfaction in post WWII large housing estates in European cities. Paper presented at *European Network for Housing Research (ENHR) Internation Conference " Sustainable Urban Areas",* Rotterdam, June 25–28, 2007, The Netherland. http://www.enhr2007rotterdam.nl/documents/W11_paper_D ekker_Musterd_Kempen.pdf (accessed 31 March 2008).

de Vaus, D.A. (2002). *Survey in social research* (Fifth edition). London: UCL Press and Allen & Unwin.

Felbinger, D. and Jonuschat, H. (2006). Promoting neighbourly interactions by common use of green spaces. Paper presented at the *European Network for Housing Research (ENHR) conference "Housing in an expanding Europe: Theory, policy, participation and implementation", 2–5* July, *2006,* Ljubljana, Slovenia. http://enhr2006 ljubljana.uirs./ publish/W18_Felbinger_Jonuschat.pdf (accessed 14 March 2008).

Flynn, B.B., Kakibara, S.S., Schroeder, R.G., Bates, K.A. and Flynn, E.J. (1990). Empirical research methods in operations management. *Journal of Operations Management* 9(2): 250–284.

Garcia-Mira, R., Arce, C. and Sabucedo, J.M. (1997). Perceived quality of neighbourhoods in a city in northwest Spain: An individual differences scaling approach. *Journal of Environmental Psychology,* 17(3): 243–252.

George, D. and Mallery, P. (2003). *SPSS for windows step by step: A simple guide and reference 11.0 update* (Fourth edition). USA: Pearson Education.

Government of Malaysia. (2006). *Ninth Malaysia Plan,* 2006–2010. Malaysia: Government of Malaysia.

Heylen, K. (2006). Liveability in social housing: Three case-studies in Flanders. Paper presented at the *ENHR conference "Housing in an expanding Europe: Theory, policy, participation and implementation*", Goverment Malaysia (2006) 2–5 July 2006, Ljubljana, Slovenia. http://enhr2006-ljubljana.uirs.si/publish/W18_ Heylen. pdf (accessed 12 June 2006).

Holt-Jensen, A. (2001). Individual relational space in deprived urban neighbourhoods. Paper presented at *ENHR conference,* 25–29 June, 2001, Pultusk, Poland. http://www.nhh.no/geo/NEHOM/publications/ENHR%20Warsawa%202001.pdf (accessed on 5 July 2006).

Jarvis, H. (2001). How urban dwellers live and work the social-environment interface. Paper presented at the *Housing Studies Association Spring Conference University of York.* 18–19 April, 2001. http://www.york.ac.uk/ inst/chp/hsa/papers/jarvis. pdf (accessed 25 July 2006).

Krejcie, R.V. and Morgan, D.W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement,* 30(3): 607–610.

Lee, Y.J. (2005). Subjectively measuring the quality of life in Taipei. Paper presented at *8th International Conference of the Asian Planning Schools Association.* http://www.apsa2005.net/FullPapers/PdfFormat/Full%2Paper%20(O-Z)/Yung%20Jaan%20Lee.pdf (accessed 21 August 2006).

Lockyer, T. (2005). The perceived importance of price as one hotel selection dimension. *Tourism Management,* 26: 529–537.

Lynch, K. (1998). *Good city form.* Cambridge: The MIT Press.

Myers, D. (1987). Community-relevant measurement of quality of life: A focus on local trends. *Urban Affairs Quarterly*, 23(1): 108–125.

Newton, P. (n.d.). Chapter 2: *Urban indicators and the management of cities.* http://www.adb.org/Documents/Books/Cities_Data_Book/02chapter2.pdf (accessed 21 May 2007).

Norhaslina, H. (2002). Declining urban quality of life? Some reflections from residents in Bangsar, Kuala Lumpur. In S.A.R. Sharifah Norazizan, E. Aishah and A. Nobaya (Eds.). *Cities in the 21st century: Urban issues and challenges* (pp. 137–147). Serdang, Malaysia: Penerbit Universiti Putra Malaysia.

Nurizan, Y., Ahmad, H.H., Laily, P. and Bukryman, S. (2004a). Kepuasan perumahan dan persekitaran isi rumah petempatan kos rendah di Johor Bahru. In P. Laily and Y. Nurizan (Eds.), *Kesejahteraan isi rumah Johor Darul Takzim* (pp. 65–83). Serdang, Malay

Nurizan, Y., Bukryman, S., Laily, P. and Ahmad, H.H. (2004b). Kesejahteraan remaja di petempatan kos rendah di Johor Bahru. In P. Laily and Y. Nurizan (Eds.). *Kesejahteraan isi rumah Johor Darul Takzim* (pp. 84–95). Serdang, Malaysia: Penerbit Universiti Putra Malaysia.

Nurizan, Y., Oh, L.S. and David, M.P. (2004c). Housing satisfaction index of middle income households. *Man and Society,* 13: 167–178.

Office of the Deputy Prime Minister (2006). Chapter 6: Liveability in English cities. In Parkinson, M., Champion, T., Evans, R., Simmie, J., Turok, I., Crookston, M., et al. (Eds.) *State of the English cities: A research study* (Vol. 1). London. http://www. communities.gov. uk/documents/ citiesand regions/pdf/ 143999 (accessed 28 November 2006).

Omuta, G.E.D. (1988). The quality of urban life and the perception of livability: A case study of neighbourhoods in Benin City, Nigeria. *Social Indicators Research,* 20(4): 417–440.

Osman, A., Zaleha, M.I. and Mohd Rizam, A.R. (2004). The effect of urbanisation on the health of urban residents. *Akademika,* 65(Julai), 111–124. at http://pkukmweb.ukm.my/~penerbit/ jurnal_pdf/akad65_06.pdf (accessed 15 March 2008).

Pacione, M. (2003). Urban environment quality and human wellbeing-A social geographical perspective. *Landscape and Urban Planning,* 65 (1–2):19–30.

Parkes, A., Kearns, A. and Atkinson, R. (2002). What makes people dissatisfied with their neighbourhoods? *Urban Studies*, 39(13): 2413–2438.

Royal Malaysian Police (2007). *Road accidents and death statistics.* http://www.rmp.gov.my (accessed 19 March 2008).

Savasdisara, T. (1988). Residents' satisfaction and neighbourhood characteristics in Japanese urban communities. *Landscape and Urban Planning,* 15(3–4): 201–210.

Shafer, C.S., Lee, B.K. and Turner, S. (2000). A tale of three greenway trails: User perceptions related to quality of life. *Landscape and Urban Planning,* 49(3–4): 163–178.

Sidhu, A.S. (2005). The rise of crime in Malaysia: An academic and statistical analysis. *Journal of the Kuala Lumpur Royal Malaysia Police College,* 4: 1–28.

Sidhu, A.S. (2006). Crime levels and trends in the next decade. *Journal of the Kuala Lumpur Royal Malaysia Police College,* 5: 1–13.

St. John, C. and Clark, F. (1984). Racial differences in dimensions of neighbourhood satisfaction. *Social Indicators Research,* 15(July): 43–60.

Throsby, D. (2005). Cultural heritage as financial asset in strategies for urban development and poverty alleviation. Paper for *International Conference for Integrating Urban Knowledge & Practice,* Gothenburg, Sweden, 29 May–3 June, 2005.

Ting, H. (1995). Determinant service attributes in the formulation of attitudes toward rehabilitation facilities. *The Journal of Rehabilitation,* 61(April–June). http://findarticles. com/p/ articles/mi_m0825/is_n2_v61/ ai_17160969 (accessed 17 December 2007).

Turkoglu, H.D. (1997). Residents' satisfaction of housing environments: The case of Istanbul, Turkey. *Landscape and Urban Planning*, 39(1): 55–67.

van Kamp, I., Leidelmeijer, K., Marsman, G. and de Hollander, A. (2003). Urban environmental quality and human well-being towards a conceptual framework and demarcation of concepts; a literature study. *Landscape and Urban Planning,* 65(1–2): 5–18.

Veenhoven, R. (1996). Happy life-expectancy: A comprehensive measure of quality-of-live in nations. *Social Indicator Research*, 39: 1–58.

Vergunst, P. (2003). *Liveability and ecological land use.* PhD diss., Swedish University of Agricultural Sciences, (accessed 4 July 2006, from Epsilon Dissertations and Graduate Theses Archive).

Verma, R. and Pullman, M. (1998). An analysis of the supplier selection process. Omega, *The International Journal of Management Science,* 26(6): 739–750.

Visser, P., van Dam, F. and Hooimeijer, P. (2005). The influence of neighbourhood characteristics on geographical differences in house prices in the Netherlands. Paper presented at *European Network for Housing Research (ENHR) International Housing Conference,* 29 June–3 July 2005, Reykjavik, Iceland. http://www.borg.hi.is/enhr2005iceland/index.php? option=content&task=view&id=14&Itemid=37 (accessed 2 September 2006). Wenger, G.C. (1990). The special role of friends and neighbors. *Journal of Aging Studies,* 4(2): 149–169.

Werner, I.B. (2005). The liveability of the city - A study of living with children in different urban design. Paper presented at *ENHR Conference,* July 7, 2005, Reykjavik, KTH, Stockholm. http://www.borg.hi.is/enhr2005iceland/ppr/Werner.pdf (accessed on 3 October 2006).

Western Economic Diversification Canada (n.d.). *The liveable city.* Vancouver Working Group Discussion Paper. http://www.wd. gc.ca/rpts/ research/livable/ intro4_e.asp (accessed 1 November 2007).

Wheeler, S.M. (2001). *Livable communities: Creating safe and livable neighborhoods, towns and regions in California* (Working Paper 2001–2004). Berkeley: Institute of Urban and Regional Development, University of California. http://www-iurd.ced.berkeley.edu/pub/WP-2001-04.PDF (accessed 8 July 2006).

Yuen, B., Supian, A. and Ho, C.S. (2006). Malaysia. In B. Robert and T. Kalaney (Eds.). *Urbanisation and sustainability in Asia: Case studies of good practice* (pp. 223–243). Phillippines: Asia. http://www.adb.org/documents/books/urbanization-ustainability/chapter09.pdf (accessed 15 February 2010).