A Toolkit for Performance Measures of Public Space

Introduction

Literature in planning and urban design suggests that good public space is responsive, democratic and meaningful (Carr, et al., 1992) and I would add diverse. This is a holistic and comprehensive definition that captures the essence of various views and paradigms on the role of public space. Empirical observational studies have developed methods to record the usability of public space. Especially Whyte's work in New York and Gehl's work in Copenhagen and other cities in the world have empowered planners and urban designers with the tools for studying public spaces and recommending planning and design changes that enhance the usability of public spaces. As a result, many cities have followed these methods and recommendations to improve their public realm. However, currently the challenge facing urban designers and planners is not so much how to make public spaces become usable. Instead, the challenge is how to make public spaces usable for different types of users who come to use these spaces for diverse purposes and attach different meanings to them.

This paper is part of a larger study that addresses the following questions. What are the characteristics of good public space? And, what are its measures? This paper focuses on the second question and suggests a set of tools to evaluate the public space by assessing its responsiveness and diversity in its usability. Hence, it focuses less on the results and more on developing a methodology to study and record the observations that truly reflect the responsiveness and diversity of use of public spaces.

The Role of Public Space

Public space is only one part, a physical manifestation, of the public realm (Thomas, 1991). Yet, it plays an important role in sustaining the public realm (Sennett, 1971; Thomas, 1991; Lofland, 1998). There is a growing belief that while modern urban societies no longer depend on the town square or the piazza for basic needs, good urban public space is required for the social and psychological health of modern communities (Poppink cited in Cooper-Marcus and Francis, 1998). Recent research in urban studies indicates that public space in contemporary times is important to generate, enhance, and sustain a sense of community (Boyer, 1994; Hayden, 1995). Local residents attach meaning to everyday public spaces and places as valuable "sacred structures" in their daily life (Hester, 1993). Public spaces where people regularly meet their friends and watch daily life play a critical role in people's lives (Low, 2000). Crowhurst-Lennard and Lennard (1987, 1995) engage the literature from sociology, psychology, psychiatry, political science, architecture, urban design, and planning to develop a list of social functions served in public spaces. This list includes learning, the development of social competence, the exchange of information, the facilitation of social dialogue, the fostering of social awareness, the enhancement of social integrative functions, and the encouragement of ethical conduct. Scholars in various fields related to urban studies contend that it is the streets, plazas, squares, parks, and other urban public spaces that have the potential to be "the stage upon which the drama of communal life unfolds" (Carr et al., 1992, p. 3).

The Changing Nature of Public Space

Currently, there is a renewed interest in public space in the city. New types of public spaces are emerging around the world and old public space typologies are being resurrected and retrofitted to contemporary needs. There has been a growing demand and resurgence in the investment in, and use of, existing and new pedestrian oriented streets, squares, plazas, and other traditional types of open public spaces in cities (Whyte, 1980; Crowhurst-Lennard

and Lennard, 1987, 1995; Gehl, 1989; Carr et al., 1992; Gehl and Gemzoe, 1996, 2000; Dane, 1997; Cooper-Marcus and Francis, 1998; PPS, 2000). While there is an emergence of new typologies of public space, the variety of functions of public life that public space fulfills is diminishing. The public realm of the city of today is much different from that of the past, not only in its space and form but in its very purpose. A significant proportion of public spaces emerging are controlled environments such as business improvement districts and special improvement districts. These spaces openly limit access to the "undesirables" but as a result discourage many other users and uses in the space. These controlled environments separate, segregate, and filter both the uses and the users. In doing so, these environments not only change our expectations in and from public space but the image and the very meaning of it. Because people view these spaces in active use they often believe that these environments are "public." A closer look reveals that the users of such controlled environments are limited to the middle or upper-middle class of society. Further, many public spaces in cities favor certain age groups and sometimes even limit their use mostly to men. This is made evident through the limited types of activities that take place in these spaces.

Measuring the Quality of Public Space

So deprived has our public realm been for decades that we are content with the marginal accomplishments we have made in restoring some aspects of it. The presence of people and activity – any people and any activity – suffices our diminished standards of quality and needs in public space. What is needed as a measure of public space today is not just the number of users occupying the space but the diversity in the type of users - a measure of who is using the public spaces.

Streets as Primary Urban Public Space

> Think of a city and what comes to mind? Its streets. If a city's streets look interesting, the city looks interesting; if they look dull, the city looks dull (Jacobs, 1961, p. 29).

Streets are an important part of open public space in the city. For many urbanites, it is the streets that represent the outdoors (Jacobs, 1993). People depend on streets for functional, social and leisure activities, for travel, shopping, play, meeting, and interaction with other people, and even relaxation (Jacobs, 1961; Appleyard, 1981; Gehl, 1987; Vernez-Moudon, 1991; Carr et al., 1992; Jacobs, 1993; Southworth and Ben-Joseph, 1996; Lofland, 1998; Hass-Klau et al., 1999; Carmona et al., 2003). "Streets and their sidewalks, the main public spaces of the city, are its most vital organs. Sidewalks, their bordering uses, and their users, are active participants in the drama of civilization…" (Jacobs, 1961, pp. 29-30). In urban areas, streets represent a majority of the area of public space (Vernez-Moudon, 1991; Jacobs, 1993; Southworth and Ben-Joseph, 1996) and the efforts to revitalize the public realm are often efforts to revitalize streets – to generate activity and to make streets lively (see, for example, NMSC). Streets are a very significant part of the informal *external public realm*. "Accessible to all, these spaces constitute public space in its purest form" (Carmona et al., 2003, p. 111). Scholars suggest that if "… we do right by our streets we can in large measure do right by the city as a whole – and, therefore and most importantly, by its inhabitants" (Jacobs, 1993, p. 314). Streets hold a special place in the literature on public space and are both literally and metaphorically the most fitting symbol of the public realm (Jacobs, 1961; Rudofsky, 1969; Jacobs, 1993; Chekki, 1994; Lofland, 1998). Hence, the discourse about the public realm or urban public space is often a discussion of the street.

It is noted that with the privatization of public space, shopping malls, corporate plazas, and the like have replaced traditional public spaces and Main Streets (Rybczynski, 1993; Kowinski, 1985 from Banerjee, 2001). The same consumer culture and the need for active and passive engagement and interaction, relaxation, and leisure also supports the concept of public life in coffee shops, bookstores, theaters, health clubs, etc. on traditional

public spaces such as streets (Banerjee, 2001). In mixed-use neighborhoods, much of this public and social life now occurs at such venues on neighborhood commercial streets.

Neighborhood Commercial Streets

Mixed-use neighborhoods are predominantly residential neighborhoods that also include work, retail, cultural, and/or light industrial uses. Urban design and planning literature in the last few decades has suggested that mixed-use neighborhoods are a desirable pattern of physical development in urban regions. It is expected that by mixing various land uses we can achieve a more vital, vibrant, attractive, safe, viable, and sustainable pattern of urban lifestyle (Jacobs, 1961; Bentley et al., 1985; Whyte, 1988; Krier, 1992; Calthorpe, 1993; Kunstler, 1994; Ewing, 1996; Coupland, 1997; Llewelyn-Davis, 2000; Duany et al., 2000, among others). Previous studies have shown that one of the most important characteristics that people look for in mixed-use neighborhoods is the liveliness and diversity of the predominantly core areas - the neighborhood commercial streets (Brower, 1996). Hence, one of the most important components of mixed-use neighborhoods is the planning and design of neighborhood commercial streets to support the functions, activities, and ambience desired by the people who will live or work there.

Considerable work has been done to establish the relationship between the level of pedestrian activity and macro-scale physical factors such as socioeconomics, location, accessibility, major destinations, density, major natural features, and so on (see, for example, Cervero, 1996; Messenger and Ewing, 1996; Cervero and Kockelman, 1997; Vernez-Moudon, Hess, Snyder, and Stanilov, 1997; Kitamura, Laidet, and Mokhtarian, 1997; Kasturi, Sun, and Wilmot, 1998; Greenwald and Boarnet, 2000; Crane, 2000; Boarnet and Crane, 2001; Ewing and Cervero, 2001; Frank and Engelke, 2001; Handy, Boarnet, Ewing, and Killingsworth, 2002; Saelens, Sallis, and Frank, 2003, among others). However, even when these macro-scale factors are similar there are distinct variations between the use of streets even within one mixed-use neighborhood. Some streets are certainly livelier than others.

Methods

The inquiry employed a multiple-method survey strategy involving a variety of techniques to collect data on the behavior of residents, workers, and visitors on three neighborhood commercial streets. Structured visual surveys and other quantitative techniques provided data that could be analyzed using quantitative methods. The three streets were studied over eight months in good weather using three types of structured and unstructured observations.

The Study Areas

This study focuses on three main streets in two cities and one town in the Boston metropolitan area in Massachusetts in the US: Massachusetts Avenue in the Central Square neighborhood in the City of Cambridge (population: 101,355[i]); Harvard Street in the Coolidge Corner neighborhood in the Town of Brookline (population: 57,107[ii]); and Elm Street in the Davis Square neighborhood in the City of Somerville (population: 77,478[iii]). All three streets are within a few kilometers of each other with very similar characteristics such as population, demographics, transportation, and other urban amenities.

All three streets studied are the major commercial streets in the neighborhoods and are perceived as being generally safe. They are well served by major transit and are relatively better places for people to walk in the neighborhood, to shop, dine, and seek other entertainment. However, none of these neighborhoods is generally perceived as representative of the sort of café society found in many European and South American cities.

Although none of these neighborhoods is considered a downtown, the streets studied are among the major commercial streets in their respective neighborhoods. A mix of uses occurs at the block level such that most of the blocks have some variety of retail at the street level to serve daily needs, and some office space usually in buildings with upper floors. While there is very limited residential space on the upper floors of the buildings on these commercial streets, most of the adjoining streets are primarily residential. Hence, most people in the neighborhood need only walk a few minutes to reach the neighborhood's commercial street. The main transit ("T") stops are located on or adjacent to these neighborhood commercial streets that are promoted as pedestrian-friendly areas. All three are historic streets that comprise mostly older building stock with only a few new buildings constructed in the last 40 years. Almost all buildings are built to the sidewalk leaving no setbacks. Aside from a few newer buildings with commercial space, all buildings range from one to four stories in height. Central Square, Coolidge Corner, and Davis Square, may be classified as predominantly residential neighborhoods with most of their daily commercial, cultural, entertainment, and other needs and amenities catered for by the businesses and other uses on the neighborhoods' commercial streets. There is a variety of commercial establishments, some small independently owned or local chains, and some chain stores. These include a variety of restaurants, coffee shops, bars, fast food restaurants, grocery stores, convenience stores, hardware stores, pharmacies, electronics stores, cleaners, apparel stores, barbershops, hair and beauty salons, bookshops, video rental stores, teaching institutes, banks, offices, apartments, and so on. In addition, the people of Boston metropolitan area consider these destinations for shopping, dining, and entertainment. While the three streets are similar in ways mentioned above, there are subtle differences in form and character as would be expected. The three neighborhood commercial streets were selected to provide an adequate sample size for the study.

Units of Study

The blocks on the three streets were divided into segments of approximately 50 to 60 feet in length. These are referred to as "block-segments." Hence, the "block-segments" constituted smaller units of study within the selected block on the neighborhood commercial street. The author conducted several drive-bys and walk-bys at each of the study areas and selected six to ten blocks in each area in which to make preliminary observations. The blocks were selected based on the presence or absence of street furniture; the difference in the number, physical size, and type of businesses; and the range in the variety of businesses on a block. Hence, some blocks had more street furniture than others, fewer stores than others, larger stores than others, and more variety in the businesses than other blocks. An attempt was made to select blocks within a study area where the neighborhood-scale characteristics such as the housing and commercial density of the area, the type of people living in the area, and the proximity to major natural features such as a water's edge, major uses such as a university or a cultural institution, a transit hub, and so on would remain common.

Observation Period

Data were collected on days with temperatures between 55°F and 85°F from late April through early October in 2005. While the cloud cover and wind conditions varied during the observations, no observations were made when it was raining. Observations were carried out between 7:00 AM and 11:00 PM spread out on weekdays and weekends. Blocks and block-segments were surveyed randomly.

Structured direct observations were used to record the location and number of people, to identify the activities they engaged in and to record the length of stay of people at various block-segments. Unstructured direct observations were used to identify how people engaged with the characteristics of the street.

Structured Direct Observations

As previously noted, each block was divided into equal block-segments of approximately 50 to 60 feet in length to conduct direct observations of behavior. The author located himself at a discreet vantage point for maximum visibility of activity at each of the block-segments for 15 minutes. People just passing by or entering a premise without stopping were not included in the observations. Activities were recorded in detail on observation sheets containing plans and elevations of each 50 to 60 foot long block-segment and were supplemented with extensive field notes. Each person was represented by a dot on the coding sheet. People who were engaged in an activity as a dyad, triad, and so on were circled on the coding sheet to indicate that they were in a group. Sitting, standing, and lying or sleeping, were recorded as variable postures. Apparent age, gender, activities, and postures were coded for ease of recording. Apparent age was recorded under four categories - children, teenagers, adults (approximately 20 to 60 years), and older adults (approximately above 60 years). Activities were recorded under various categories and were described in detail where required. Direct 15-minute observations of activities were conducted seven times each on weekdays and weekends at each block-segment.

Unstructured Direct Observations

The author observed the three study areas from April through late October, 2005, and recorded activities and behavior patterns using field notes. In addition, photographs and short videos (30 seconds to three minutes) were utilized to record behavioral patterns. During this period, the author often acted as a participant observer, using the businesses and street space in the study areas.

Measures

A place would appear lively if there were large number of people for short durations or there were fewer people staying for longer. The number of people and duration of their stay are equally important and the overall social activity or liveliness of an environment is a product of the number of people and the duration of their stay (Gehl, 1987). Similarly, the use of the space over the duration of the day is equally important as an indicator of the usefulness of the space. Men, women, children and the elderly have different perceptions of public space that affects their use of public space. The variety of activities and the diversity in age and gender of the users indicate how responsive the space is for different users and purposes.

Using the data collected from direct observations, a “Good Public Space Index” was determined for each of the 78 block-segments. Six measures were used as indicators of the responsiveness and diversity of the street environment. These six measures contributed to the index. 1) The *Intensity of Use* was determined by calculating the number of people engaged in some stationary and sustained activity at the block-segment. 2) The *Intensity of Social Use* was determined by calculating the number of people in groups of two or more engaged in some stationary and sustained social activity. 3) People’s *Duration of Stay* was calculated by studying how much time people spent in stationary activities at the block-segment. 4) The *Temporal Diversity of Use* was determined by calculating the use of the space over the duration of the day. 5) The *Variety of Use* was determined by calculating the number of types of activities at the block-segment. And 6) The *Diversity of Users* was determined by calculating the variety in the gender and age of the people at each block-segment.

Each person observed in stationary activity on the block segment accounted for one unit score. Similarly, each person observed in stationary social activity on the block segment accounted for one unit score. Duration of stay was recorded under five categories: 15

seconds to less than one minute, one minute to less than five minutes, five minutes to less than 10 minutes, 10 minutes to less than 15 minutes, and over 15 minutes, and a corresponding score was assigned. Temporal diversity, variety of use and diversity of users were calculated independently by using Simpson's diversity index. Since all these aspects are important in determining how responsive and comfortable a space is for its users the six measures were standardized and given equal weighting in determining the "Good Public Space Index."

Results

Structured and unstructured direct observations showed that while all three streets were the neighborhoods' active public spaces only specific parts (block-segments) of the streets were able to support most of the intensity of use. Further, even among the block-segments on the three neighborhood commercial streets that supported high use there were a handful of block-segments that were able to support both the intensity and diversity of use.

Good Public Space Index was reported as a value from zero to ten where the higher the score the more intense and diverse the block-segment was on the street. Of the 78 block-segments studied on three streets over half the block-segments scored less than one on the Good Public Space Index. Barely ten percent of the block-segments on the streets scored over three suggesting that these locations on the street were able to support sustained social activities and lingering behavior where there was some variety in the activities as well as some diversity in the use of the day and in the kind of people who used these block-segments.

Limitations and Suggestions for Future Research

By classifying the users in different age groups and gender the author was able to capture a portion of the diversity of users. However, the biggest limitation was the ability to classify and record users by race, economic class and level of education. Race, economic class and level of education play a significant role in shaping perceptions that affect the use of public space. Observations would need to be limited to even smaller area of the street to be able to record race along with apparent age and gender. Even if researchers are able to do so the accuracy of that information based on observations may be questionable. Further, due to the nature of the information required for developing the index the data collection process used in this research remains very tedious and time consuming. This has the potential to lead to observer fatigue that may compromise the quality of the data. If possible, video cameras or time-lapse photography may be used to allow the researcher to record data at leisure by viewing the film or photographs.

This research was limited to neighborhood commercial streets. Similar research is needed in the study of other public spaces in the urban environment. Urban Designers and planners need to continue the research in this field of understanding and assessing public space to be able to measure the "goodness" or "publicness" of these spaces. Development of robust tools is the first step in analysis of public spaces for urban designers to better inform policymakers.

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[i] Source: US Census Bureau – Year 2000 data
[ii] *Ibid*
[iii] *Ibid*

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