

STREET SPACE SUSTAINABILITY IN ASIA: THE ROLE OF THE ASIAN PEDESTRIAN AND STREET CULTURE

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Abstract: Discussion initiates from the present practice of street space design and management in the Asian context to establish that the current thrust of standards and mandates is geared towards promoting vehicle use and lacks consideration of other street users such as the pedestrian. The objective is to conduct a socio-cultural analysis of the Asian street user focusing on behavior, street sociology and culture. It aims to understand the Asian psyche and how this knowledge may contribute to enhancing street space sustainability. Four aspects of the Asian street user are considered: its physiological attribute and the need-hierarchy, the Asian psyche compared with its Western counterpart, sociology of street use, and potential of reviving pedestrian culture. An interpretative, culture-bound approach is utilized to define the parameters to sustain people's use of the street environment. It aims to review historical precedents on street space and use as well as utilize various anthropological methods.

Key Words: *Asian Pedestrian, Sidewalk Space Design, Socio-cultural Approach*

1. INTRODUCTION

1.1. The Current Approach to Street Design and Management

A number of Asian cities are undergoing transformation from a *traditional city*, built to carry foot traffic and provide function as meeting space and marketplace, to an *invaded city*, characterized by an upset balance brought about by car domination, and is in perilous danger of becoming an *abandoned city*, described as a place where public life ceases to exist (Gehl and Gemzoe, 2003). This was partly due to national policies which encouraged motor vehicle ownership as well as the adoption of Western street design standard and practices. The former has brought about a major utility shift from a multi-activity space where people was prioritized to a space dominated by motor vehicles, thus, displacing weaker elements. This created a feeling of unease among its 'weaker' street users, foremost of which are the pedestrians. This aggravated the alienation towards the said space and discouraged walking and other non-motorized transports (NMTs). While in the latter, the adoption of Western standards and techniques brought about a mismatch between facility provision and its users. To cite examples, Northern Bandung in Indonesia was developed through the 1919 North Development Plan aimed at creating a European district within a tropical country (Soewarno, nd). Sidewalks were deliberately excluded in the design since most of the roads were to function as distribution networks; the French colonial rule imposed public and private space segregation to create a distinct area for each activity on Vietnam's development (Drummond, 2000) converting most of the multi-use space to single-use space resulting in ineffective

spaces (Edensor, 1999).

In the transport field, Western models continue to have strong influence on the East. This has socio-cultural basis since design influence in Asian colonial cities was imposed by the colonizer while in non-colonized metropolises, such as cities in Japan and Thailand, was through the assimilation of Western techniques during the Modernization period. For example, the physical planning principle introduced by Spain to colonial Manila served as a morphological model replicated to a greater extent in urban centers throughout the archipelago (Reed, 1978) and the urban fabric of Georgetown, Malaysia reflected its British colonial past (Picard and Wood, 1997).

The typical approach to road design in Asian countries had been largely tailored to Western standards such as that set by the AASHTO's¹ Green Book. This handbook has limited design guidance for pedestrian facility design (Hook, 2002). Thus, the present pedestrian facility design procedure in Asian developing countries had been based on the U.S. Highway Capacity Manual (HCM, 2000). The Pedestrian Level of Service (PLOS) which was originally developed in the field of traffic engineering (Watson and Crosbie, 2004) considered pedestrian space occupancy, and mean speed and flow rates. In its analysis, it assumed that a pedestrian exhibited similar behavior to that of vehicles (HCM, 2000) such as traveling in a linear path, faster speed indicates efficient flow, more people to a degree indicated congested condition. However, this is partly inaccurate since pedestrians exhibit a complex movement pattern such as the tendency to swerve to avoid obstruction or flexibility in route choice. Moreover, a pedestrian may need to stop and buy food from a sidewalk vendor, rest on a bench, or chat with an acquaintance, thus, changing from moving to nonmoving behavior. In this case, sidewalks function not only as a conduit for distribution but as venue for communication.

Furthermore, increasing road density did not ameliorate transport problems. However, this increased awareness among transport professionals to seek for alternative approaches such as one that is governed by the principles of social equity, environmental protection and economic balance. The objective is to achieve a more sustainability-oriented culture. This reflects the need to focus on a user-centered approach so as to give back streets to its original users. For example, Bogota's 2000 Transportation Master Plan stipulates that pedestrians should be prioritized and new highways and road facilities must include grade-separated bicycle paths and sidewalks (Hook, 2002).

In Asian cities, transport network development is a national mandate while an initiative on improving pedestrian facilities and encouraging NMTs is considered a local mandate. It is implemented through its local government or as a private group initiative. As an example, pedestrian facility provision in Makati City, Philippines started in the early 1990s and later formalized under the Underpass and Walkway Network Master Plan in 1999. The aim was to minimize traffic congestion and segregate pedestrians and vehicles within the Central Business District (Kishue et al, 2005). In Manila City, Philippines, the present mayor closed off identified streets for exclusive pedestrian use while a number of private foundations took on the responsibility of improving the urban quality of the University Belt (UE-FRASI, 2000).

It was shown that in most developing cities in Asia the current transport policy in general, and

¹ American Association of State Highway and Transportation Officials

pedestrian facility provision in particular, often mimicked their Western counterpart which resulted in unsound urban spaces. They lacked consideration of the socio-cultural value system of the place. This resulted in a mismatch between facility and user. Espoused solutions were fragmented and partial towards a specific transport group. They often benefited vehicle owners while conveniently forewent the needs of other street users such as the pedestrians. However, alternative concepts such as mobility management, livable cities, new urbanism, sustainable and compact cities and transit-oriented developments (TODs) had emphasized the central role played by the pedestrian (and the other street users). This makes it relevant to understand pedestrian behavior especially from a socio-cultural viewpoint. To echo Rapoport (in Moudon, 1987), pedestrian behavior is not just a function of the physical environment but is also defined by culture. Cultural factors refer to the result of unwritten rules and customs, traditions and habits, prevailing lifestyles and the definition of appropriate behavior in a given society. Asian pedestrians, similar to its western counterpart, have a distinct pedestrian culture that when properly understood would provide useful insights in the provision of a more effective Asian pedestrian facility.

1.2. Objectives

The objectives are as follows: 1) to understand the Asian pedestrian and the factors that contribute towards the use of the street environment by discussing the socio-cultural basis, history and the components of walking; and 2) to provide insights that may pave the way in the conceptualization of design solutions and recommendations as well as policies on the effective management of pedestrian spaces so as to enhance street space sustainability².

1.3. Methodology

The research takes off from a socio-cultural perspective of space use as a means of understanding Asian pedestrians. It is descriptive and at the same time interpretative within the bounds of culture so as to define the parameters to sustain people's use of the street environment.

Discussion focuses on various aspect of the pedestrian such as, but not limited to, the following: the description of a forest-based culture rationalizing the difference between the Asian pedestrian and their Western counterpart, pedestrian need-hierarchy referring to street user requisite to increase satisfaction towards street space use, the concept of movement and non-movement behavior; and the potential of reviving and ensuring street culture continuity through potential street design recommendations to achieve street space sustainability.

Data gathering was conducted through the review of historical precedents on street space use, intensive review of primary and secondary resources, direct observation and implementing questionnaire survey. It determined behavioral patterns and consistency of activities to better understand potential users and interpret street space phenomena as these concepts help redefine planning concepts towards the effective design and management of Asian streets.

The authors were aware that this type of study poses the danger of oversimplification and unwarranted generalization. Thus, the authors reiterated that these are inferential concepts and need to undergo more extensive empirical study. The authors consulted various data and information sourced from a number of study sites in East and Southeast Asia, namely: Bandung City, Indonesia; Bangkok, Thailand; Tokyo (Edo), Japan; Manila City, Philippines.

² street space sustainability is determined by the loyalty of street users towards a given space as manifested by their constant presence not only as passers-by but as active participants in the given space thereby reflecting the pedestrian facility effectiveness

Data results were preliminary and based on a small sample size, thus, they are only reflective of the sample.

2. THE DYNAMICS OF THE ASIAN PEDESTRIAN

Pedestrians use streets for different purposes: to undergo utilitarian trips making movement a derived demand; or to conduct optional trips such as to exercise or breathe in fresh air, to socialize and interact. In the latter examples, the sidewalk becomes a destination in itself. The common assumption was that pedestrians were moving entities, therefore sidewalks only served as space for distribution. However, as indicated above, sidewalks are not mere conduits but also serve as a space for communication. Thus, to achieve street space sustainability, a user-centered approach considers the users as agents of change. Their loyalty towards a given space is manifested by their constant presence not only as passers-by but as active participants in the given space thereby reflecting the level of effectiveness of a pedestrian facility.

2.1. Asian Pedestrians from a socio-cultural perspective

The psycho-cultural research model developed by Whitling (1974; 1994) serves as a jump off point of this paper. The core assumption is that personality development is shaped by its primary and secondary institutions. Primary institutions refer to three interrelated context: the physical environment, history and maintenance systems (i.e. subsistence patterns, settlement patterns, social structure). The primary determines the secondary institutions that directly influence both learned and innate adult personality (Berry et al, 2002). This is further reflected in ones' projective expressive systems (i.e. religion, art and recreation). Pedestrian attitude and behavior is largely determined by the physical environment, its history and the maintenance systems which determine the pedestrian need-hierarchy (innate) and their street behavioral manifestations (learned) which translates into a distinct street culture (projective expressive systems).

Geography and climate have deep impact on people's way-of-life and behavior (Furukawa, 1935; Suzuki, 1978). The Asian region, in general, is a tropical forest. This kind of environment encourages among its settlers a healthy respect for and harmony with the natural environment, equality among beings, and an evident lack of hierarchy. The forest is compact with diverse flora and fauna which translates into high tolerance to crowded space and increased variation in street users. Forest-based streets do not segregate but rather integrate its elements and takes on a temporal segregation of activities. The forest also influences settlement morphology wherein the road system reflects an irregular and unstructured pattern due to adherence to the geographic conditions of the site. This suggests a low perceived order. Also, it encourages a human scale urban form. The cacophony of sounds and presence of various elements in a forest is imitated in the street system wherein the streets become a mixed use spatial structure which carries various activity types and mixture of different entities.

Sociologically speaking, space use had been highly influenced by the introduction of agriculture which is the most common subsistence pattern in Asian societies. This resulted in a sedentary settlement pattern, high population density, an extended family type and a tight socio-political stratification (Berry et al, 2002). People in this society tended to be conscientious, compliant and conservative while rearing emphasized obedience training and responsibility rather than independence and self-reliance (Barry et al, 1959). This is reflected

in the Asian psyche and can be viewed on how Asians behave in and perceive a particular space.

Space perception differs between Western societies, referring to Americans and Eastern Europeans, and the East, referring to Japan in particular (Hall, 1968). A simplified model would indicate that in the West activities are defined horizontally illustrating a one space-one function relationship wherein a clear segregation between the centrally located plaza surrounded by public facilities, the church and the market and the sidewalk exists (Kurokawa, 1988). As opposed to the Western construct, the Japanese concept of space takes on a vertical, time-dependent dimension. Events are dictated to happen based on the time of the day, almost space-independent. A vague relationship exists between its activity nodes and connectors as the latter takes on the element of time. Time acts as the interval or '*ma*' between two functions (Nute, 1999). *Ma* is defined to be the temporal interval between two different phenomena or between two discrete events (Kurokawa, 1988). In theoretical terms, *ma* takes on a vertical dimension of an intangible, in-between connector between activities (nodes), and may also be analogous to the concept of non-movement space wherein it acts as the interval between two acts of movement.

Social activities create shared meanings and develop into a distinct culture. Pedestrian presence in sidewalks is brought about by three trip purposes: utilitarian, optional and social (Gehl, 1987). Pedestrian decision to use streets is generally based on various factors. Utilitarian trip is solely based on necessity and accomplished under most social or environmental conditions. The latter two trip classifications, optional and social, are dependent, to a certain degree, on the external environment and the presence of other street users, respectively. The latter implies the need to develop spaces that induce interaction and spontaneous exchanges among its users. This enables translation of (street) space into place (Aldo Rossi, 1966). Previous researches have dealt with the study of social exchanges in urban spaces (Funahashi, 1979; Kamino, 1980). These studies have also reiterated that patterns of social contacts are culturally-specific. For example, while street vendor presence is common in most Asian cities, their form, function and the types of social exchanges vary from one city to another. Also, while the concept of acknowledging another person is universal, the form of greeting varies whether kissing on the cheeks, both cheeks, a handshake, bowing ones head is a result of culture.

Acculturation processes expose inhabitants to a variety of external factors. These influence people's way-of-life. Even so, the core of ones social structure and values still remains the same. One example is how Asian street users utilize a given space for a variety of purpose such as access path, venue for everyday activities, living space, integrator space, and recreational space. Asian street life reflects the dynamic outdoor life enjoyed by its people. It is common to find a variety of eating stalls, vehicle repair facilities, street vendors and parked vehicles as well as people waiting for buses and other transport modes along the street (Preiser and Ostroff, 2001). The presence of small traditional communities in Asian cities is indicative of the intensive land use mix, compact quality and pedestrian-scale urban form common in forest-based settlements. In these areas, walking becomes the main mode of movement. Due to mushrooming of contemporary modern developments, these informal settlements are often considered in a negative light. However, it is within these enclaves that local culture can be authentically experienced.

2.2. Pedestrian need hierarchy

Man is first and foremost a pedestrian. Pedestrian history is as ancient as traveling which goes

back 5000 years (Peñalosa, 2004). Walking culture existed prior to the introduction of motorization. This rationalizes the need to prioritize pedestrians as compared to other modes. Traditional streets facilitated movement and, similar to traditional Western urban spaces such as the Greek agora and Roman forum, functioned as communication venues. This entails the analysis of streets as both a distribution and communication network. The latter refers to non-walking activities conducted within the street environment.

The consideration of pedestrian needs is a significant prerequisite in the design of sustainable street spaces. The basic premise of the need-concept adopted from the area of consumer behavior is that pedestrians behave in a similar fashion to consumers as they utilize space in a way comparable to consuming a product. Needs and values are the micro-level driving factors of human behavior (Vallacher et al, 1994) which are realized through opportunities. The latter refers to products or services that have the capacity to satisfy one's needs (Jager, 2000). In this case, opportunity refers to sidewalk attributes such as the ability to provide seamless travel, comfort, convenience to name a few. These are parameters or attributes that would encourage user loyalty or sustain people's use of the street environment. However, these factors do not influence choice but support or inhibit pedestrian decision (Mumford, 1937).

The pedestrian need-hierarchy resulted from an extensive literature review on effective pedestrian environment and inspired by the human needs theory postulated by Maslow (1954) and Max-Neef (1992). Pedestrian level of service (PLOS) concept (Fruin, 1971) is defined as the elements that attract potential users to the system (Vuchic, 1981). At the base of these needs is the desire for movement (mobility). Aside from this, pedestrians have other physiological or psychological needs such as protection, ease, enjoyment, equity and identity. Figure 1 reflects the various needs in a hierarchical order. It illustrates the six criteria and the attributes which would fulfill each criterion. It is noteworthy to mention that the pedestrian need hierarchy considers both movement and non-movement as contributory towards increasing pedestrian satisfaction. To define the six criteria: *mobility* refers to a walking environment which allows barrier-free movement from point of origin to destination at a comfortable walking speed with no or limited impedance and ensures ease in orienting oneself within the street network. *Protection* refers to the state of being free from danger or injury while walking by limiting pedestrian-vehicle conflict, providing provisions to ensure that accidents will not happen. *Ease* refers to the quality that would make one feel emotionally and mentally secure, comfortable, convenient and stress-free while walking. *Enjoyment or leisure* refer to the quality of the walking environment which allows access to transport-disadvantaged persons (TDPs); allows equal opportunities for other activities besides walking (sitting, chatting, eating); and does not limit sidewalk use to pedestrians but allows access to other street users such as vendors and leisure walkers. This environment also creates venues for socialization and interaction. *Equity* refers to opportunities for self-expression, serves as venue for socialization and interaction, provides ways of enjoyment and leisure, and adds vibrancy to the place. *Identity* refers to elements that acknowledge socio-cultural needs by creating venues for cultural activities, producing sense of place and encourages a feeling of belonging amongst its users. The author established a preliminary hierarchical order wherein the base need would be movement based on the premise that streets are used as distribution network. The criteria can be divided into two, personal and social. Personal refers to individual needs while social means the population-level needs. Personal needs are near the base while social needs are found on the upper levels. The theoretical basis for this is that in order to increase satisfaction personal needs should be provided before population-level satisfaction can be accommodated. However, it is necessary that the concept of pedestrian need-hierarchy be examined and evaluated further for its

relevance.

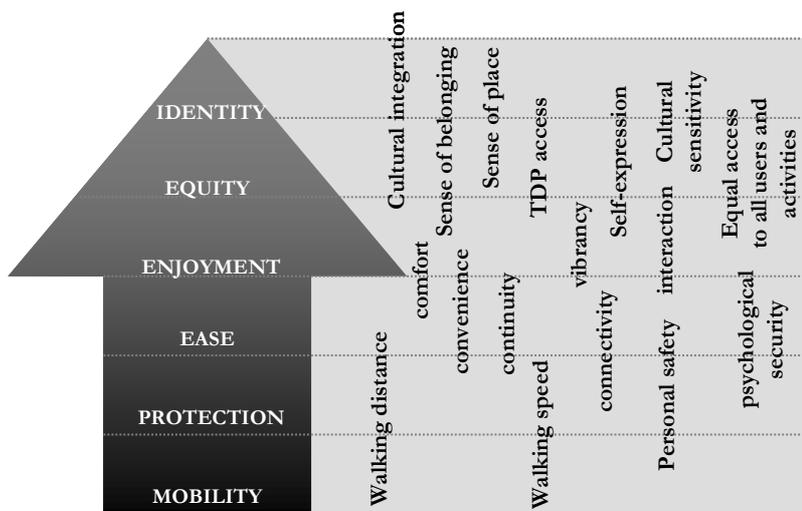


Figure 1 The pedestrian-need hierarchy. The bottom-most criterion is mobility (personal level need) while the topmost criterion was identity.

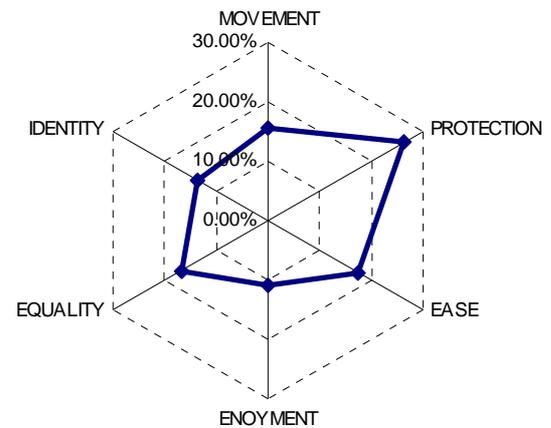


Figure 2 The survey results indicate that protection is the most important criterion while enjoyment is the least important followed by movement.

A pedestrian survey was conducted in Manila City, Philippines to evaluate the order and relevance of the pedestrian need hierarchy. 90 samples were collected. Figure 2 shows the result of the survey specifically on the perception of the pedestrians on the hierarchical structure of the need-hierarchy. The survey proved that mobility is not the most influential element in the decision to utilize streets. Instead, protection came out to be the main consideration reiterating the importance given towards physical safety. The criterion ‘equality’ has surprisingly garnered a relatively high score specifically on giving importance to the presence of other street users such as sidewalk vendors while ‘enjoyment’ was the least important.

2.3. Movement Aspect of Asian pedestrians

It has been reiterated throughout the paper that pedestrian behavior is culturally-specific. Sourced from a number of studies, table 1 shows a compilation of the mean walking speed of pedestrians in various cities. In general, pedestrians in Western countries walked faster as compared to their Southeast Asian counterparts. Except for the pedestrians in Fukushima, the walking speed of Japanese individuals varies between 81 to 93.6 meters per minute with pedestrians in Tokyo walking the fastest. In Southeast Asia, the average walking speed of pedestrians varies between 70 to 80 meters per minute. This can be due to the similarity in environmental conditions of Thailand, Singapore and the Philippines. Also, Filipinos generally have the shortest walking distance within the 220 meter range (Gerilla, 1995). In the Pedestrian Facility Guide (1993), the trips majority of pedestrians choose are utilitarian trips such as for the purpose of going to and coming from work, appointments, errands and deliveries, and multimodal transport (i.e. walk to jeepney stops) as well as for social trips such as for health and exercise, recreation, extracurricular activities, combined recreational and shopping. The (walking speed) values were grouped together according to region and there was a tendency for cities belonging to the same region to approximate values within a similar range. Southeast Asian pedestrians have an average walking speed within the 70 meters per minute range. In North America and Europe in the 80s range while Japan was a bit variable

but ranged around the 90s especially in the main cities. This further illustrates that movement behavior based on the average walking speed of pedestrians is culturally-specific.

Table 1 Mean Walking speed by locality/country, 1995

Locality, Country	Author	Mean Speed (m/min)
New York, USA	Fruin*	81.00
Pittsburgh, USA	Hoel*	88.00
Columbia, USA	Navin and Wheeler*	79.00
Paris, France	Kamino**	87.60
London, England	Older*	79.00
Singapore	Tanaboriboon, et al.*	74.00
Thailand	Tanaboriboon and Guyano*	73.00
Metro Manila, Philippines	Gerilla*	70.65
China	Yu*	72.00
Fukuoka, Japan	Kamino**	81.00
Tokyo, Japan	Kamino**	93.60
Osaka, Japan	Kamino**	90.00
Koori-cho, Fukushima, Japan	Kamino**	69.60

(*Gerilla, 1995; **Kamino, 1980)

2.4. A Preliminary Study on Pedestrian Non-movement Behavior

One study on human behavior and space design focused on the correlation between objective conditions of space and the psychological reality of that space so as to derive a new paradigm in urban space planning (Kamino, 1980). The study further stressed that human movement (pedestrian behavior) contains both rational and irrational components further suggesting that friendly designs should simultaneously accommodate people's need for both motion (movement) and statics (non-movement). Pedestrian behavior is described as complex and is composed of both movement and non-movement (Funahashi, 1979). Some examples of the latter are waiting and resting.

The concept of non-movement within Asian streets grew out of the realization that in order to provide sustainable spaces, it is necessary to consider the various behaviors exhibited by the pedestrian and other street users. This means considering streets as both distribution and communication networks. Non-movement space has played a significant role in the evolution of Asian or oriental space. Thus, it is within this premise that the perceived non-movement behavior of Asian pedestrians is examined.

Asians are, in general, social individuals wherein they usually do not go out alone, prefer to do activities together and are always in groups. Within these social groups, the streets become destinations themselves and are changed into eating places, shopping venues or meeting areas. The regular Friday *pasar* along Ganesha street in Bandung, Indonesia draws a large crowd with the mosque worshippers as their captive market. The flea markets and bazaars in Asian city spaces, more often its streets, reflect the strong Indic-Chinese influence that has evolved into a distinctive *pasar* culture. The presence of a diverse group of street users contributes to street liveliness. Asian pedestrians do not differentiate between public and private space using the communal space as an extension of living area, a venue for commerce and exchange, and a place to socialize. Also, there is a direct correlation between walking and non-movement spaces. An area that attracts high pedestrian volume usually has a greater tendency for non-movement activities. As such, the opportunity to increase sidewalk

sustainability requires the reconsideration of non-movement activities in the design of such space.

A pedestrian diary survey was conducted on September 2006, out of the 200 survey sheets given out only 33 respondents returned the forms or 16.5% of the sample. Thus, preliminary results would not allow generalizations. The respondents were requested to record their daily walking activities starting from the time they leave their residence. Figure 3 illustrates that the average number of daily walk trips an individual underwent in a day was six. Also, it showed that those having more than six trips in a day spent longer time duration outside per walk trip. Figure 4 illustrates the distribution of daily walking activity pattern of pedestrians, indicating both movement and non-movement activities. Since the survey was taken during the *Ramadhan*³ period, the results do not reflect the regular pattern of pedestrian behavior. It is common during this period to start the day as early as three in the morning.

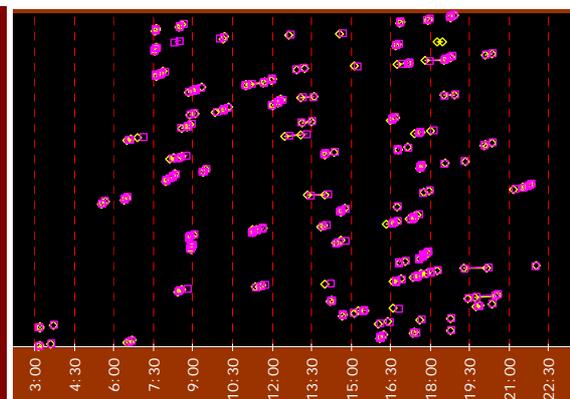
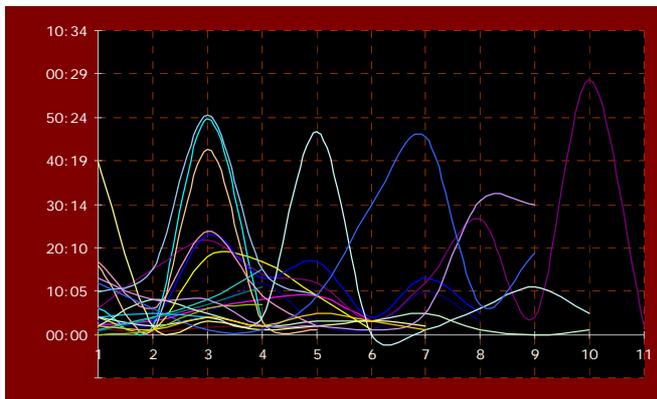


Figure 3 This illustrates the frequency and duration of non-movement activities conducted by the respondents. The average number of daily non-movement activities was pegged at 6.

Figure 4 This illustrates the distribution of daily walking activity pattern of pedestrians, indicating both movement and non-movement activities.

The study of non-movement behavior provides us with the knowledge that Asian space is temporally-dictated. As such, it requires flexibility so as to accommodate various activities which are conducted at different times of the day. For example, the *tahu* (tofu) vendor who sells his product in the mornings and stations himself in front of the community commercial center may occupy the same space which in the late afternoon serves as neighborhood playground for the children and could be the venue for musical performances in the evenings. The temporal segregation of activities and the vertical quality of Asian space should be one of the main considerations in sidewalk design. As an example, pocket-sized activity spaces should be placed strategically along the sidewalk path. The space should be versatile to accommodate a multitude of activities.

The seemingly disorganized spatial quality of Asian space is one of its unique characters which could not be encountered in most parts of Europe and in the United States. Based on previous studies, the apparent disarray actually contains a measurable hidden order (Rodin and Rodina, 2000). Diversity comes from the influence of the forest environment wherein the cacophony of sounds, sights, smell, taste and touch can only be experienced simultaneously within the Asian street space. The perception is further demonstrated by the presence of food

³ a month of fasting for Islamic faithfuls

vendors. The variety of food sold in Indonesian *warungs* (street shops), Japanese *yatai* (stalls) and the Philippine *turo-turo* (traditional restaurant), brings forth a combination of visual, olfactory and gustatory sensations which compel passersby to taste its flavors. This adds interest to the Asian street space. In most Southeast Asian cities, vending has become an institution in itself albeit informally. Thus, policies towards their presence should be further examined. The present approach calling for their total removal from the streets had never been effective and therefore, can never be a favorable end solution. Furthermore, the pedestrian survey conducted had shown the important role they play not only in economic terms but also at the cultural level. A compromise between vending and regulating should be arrived at so as to define locations most appropriate for such activities as well as improving the aesthetic quality of their presence.

Worth mentioning are the various street elements that have socio-cultural roots. As an example, the *golodog*⁴ can only be found within *Sundanese* settlements. This refers to a 50-cm bench connected to the dwelling unit facing the alleyways where people can seat and talk to each other. This defines the main alleyway as opposed to the back alley. However, in *urban kampungs* (mixed communities) where the majority of inhabitants are *Sundanese*, the *golodog* is still present but had been transformed into a terrace which used a different material from the original wooden bench (i.e. ceramics) (Rahaju, 2006). Although this type of element is not present within *Javanese kampungs*, there is, however, always a specific place provided for the social venue of its inhabitants such as the *alun-alun* which served as the local landmark and centralizing element for the *Javanese kampung* (Siregar, 1990).

There are also various street practices that have animistic⁵ roots. Animism is the pre-colonial belief of most of the colonial cities in Southeast Asia. Animism was born out of the forest (Suzuki, 1978). In Bangkok, it is often common to see street trees that have colored rope-like fabric going around the tree trunks. The older the tree the more of these fabrics go around it. Such is a common practice in Shintoist Japan as well. Also, the presence of street shrines and spirit houses on or near the sidewalk is said to reflect the reverence of the present owners towards the spirits who lived on the lands. Some commercial establishments would bring out food in the morning to offer to the gods so that they would have higher profits for the day. Also, some pedestrians would bring out food and offer them to the increasing dog population within metropolitan Bangkok. Thus, indigenous knowledge, both positive and negative, should be determined, considered and evaluated if the aim is to create a sustainable street space for its users.

2.5. Pedestrian culture: A look at the history of walking in Asia

As previously mentioned, pedestrian culture has a long history and an overview of transport development in Asia will provide us proof of its presence. The walking period in Asian Cities may be defined as the period prior to the late nineteenth century (around 1860s) or before motorization was introduced. The Edo period in Tokyo, and the pre-colonial era and the early colonial period in both Indonesia and the Philippines were characterized by a predominantly walking society. This influenced the urban pattern of the area. Its characteristics included: major mode of transport is by walking while horses were used for communication purposes (Naito, 2003). In Edo, aside from walking, transportation was mainly by palanquin. There was limited or very few roads within this period. Edo period roads were narrow, unpaved and hook-shaped for defense and military reasons; town centers had compact urban structures

⁴ traditional *golodog* stands on stones because you cannot put wood directly to the soil due to high humidity

⁵ the doctrine that all natural elements within this world possesses a soul

with very dense, intensively mixed land use; the structures were of low-rise (2 to 3 levels) dictating a pedestrian scale urban form; building materials were made up of impermanent product such as wood, bamboo and palm leaves illustrating the permanence in the impermanence of Asian traditional structures; residences (sometimes in special quarters) were close to each other located either along the town center or waterways; travel distances were short. In the 1970s, walking was still a major mode of transport for most of Asia. An estimated 60 percent of Jakarta's work trips were on foot and in Tokyo, walking and cycling accounted for almost 51 percent of all trips (The State of Asian Urban Transport, 2000). At present, Bandung still has a large walking population given its compact city structure, allowing various part of the city to be accessed by foot. However, the lack of clear-cut sidewalks in most of the streets has allowed the proliferation of people walking along the carriageway and if sidewalks are present, the worsening environment has encouraged most individuals to either take their private vehicles or the public transport even for short distance trips (i.e. due to the plentiful paratransits such as *angkot*). In a study by Barter (2000) the percent of non-motorized trips in select cities illustrated that during the last two decades of the 20th century, walking constitutes a large percentage in the overall trips in Asia (40 % in Jakarta, 20 % in Manila and 27 % in Tokyo). However, this percentage is slowly decreasing because of efforts in some Asian countries to increase motor vehicle traffic speeds such as in China and Indonesia (Hook, 2002) although China has curbed this mandate. It has been shown that walking is one of the most important yet neglected modes of travel in urban transport planning in Asia specifically at the lowest political unit (i.e. *kampung* or *barangay*). Trips made within these settlements are oriented towards short trips, thus, pedestrian prioritization should be incorporated within the framework of infrastructure planning and design measures as well as traffic enforcement regulations (Dimitriou, 1995).

2.6. Culture of the Informal Street Users

A major component in street space sustainability is social equity. This refers to the accessibility of the streets to all users such as the pedestrian, the informal street economy and other street users. The latter is often considered as obstructions to pedestrian flow. However, their rampant presence in almost all streets surveyed in Southeast Asia and how the corresponding government deals with them deserves mentioning. As a matter of policy, and in the name of cleanliness and beauty, street vendors are being cleared out of the sidewalks. But this is often met with low compliance. Again, the concept of street takes on the Western view that it is solely for movement. However, Asian streets do not only distribute but serve as a market place and trading venue as well. This also has socio-historical roots. In Edo, street stalls or *rotenshō* are set up to sell miscellaneous articles for daily use typically on busy street corners appearing everyday in regular locations (Japan Illustrated Encyclopedia, 1993).

The informal sector is defined as those that undertake activities that do not pay taxes, do not submit regular government reports, and at times, routinely violate certain rules or law (Habito, 2005). A 2002 World Bank Study estimated its size in 104 countries. Regarding some Asian countries, the statistics are as follows: the Philippines, 43.4 percent ranked 22nd, Thailand at 52.6%, has an even higher ranking (9th), Malaysia and Indonesia are farther down with 31.1% and 19.4%, respectively, India has 23.1%, China 13.1%, and Japan 11.3%. (Schneider, 2002).⁶ The informal economic sector is a significant presence along most commercial areas. In more traditional districts in the Philippines, they occupy the "five-foot-way" contributing to a unique sidewalk culture. The streets become makeshift marketplaces where the informal economy thrives. Vendors and hawkers alike display their wares wherein

⁶ A note of caution is that different estimation methodologies probably limits the usefulness of comparing these numbers across countries

buyers may use the art of bartering to purchase goods and services. Informal activities continue to proliferate because of its ease of entry and reliance on indigenous resources, family ownership small scale operation, unregulated and within a competitive market (Bangasser, 2000).

Informal economy agglomerations are generally found near activity generators such as school entrances, in front of shops and stores, churches, shopping malls, access towards train stations and at intersections. This provides them assurance of steady flow of customers. The type of economic activity is dependent on the activity generator, usually complementing such enterprise. Snack food vendors are found outside universities and schools, fruit stand vendors are found outside malls; flower vendors found outside churches and worship areas; public transport colorum outside activity generators. Most common goods sold by these sidewalk peddlers and hawkers are consumables such as food products. Within the central business districts, the most common stalls are shops providing lunch, snacks and drinks. Sometimes, tables and chairs would complete the ensemble creating a distinct street architecture, however inferior the materials used or shabby it may seem to onlookers. The inventive minds of these store owners allow them to create and put apart such stalls within few minutes. In the Philippines, the original vendor cart has evolved from the common *kariton*⁷ to the converted bicycle. This occurred because of the mobility and flexibility of using bicycles. In Bandung, one may be presented to a multitude of stalls from the fixed *warungs* along the sidewalks to the semi-ambulant and ambulant *kakilima*. Dago street (Bandung) has already banned sidewalk vending. However, the daily observation conducted by the researcher shows a different reality. The vendors are still present, at a lower density, but they do not vend on the sidewalks but are conveniently accommodated at the front corner of the adjacent commercial shops, sometimes their wares abutting the sidewalks. This is also true in Bangkok wherein Mondays are no vending day along Silom Road. Vendor resourcefulness only transfers their stalls from the main Silom road to the intersecting *soi* (alley) where vending is not banned. These are socio-economic and cultural realities that transport professionals have failed to consider but must be taken into consideration especially in the design of sidewalk space within Asia.

2.7. Towards a policy of a user-centered street environment

According to the Organization for Economic Co-operation and Development (OECD), a sustainable transport system has to address the following development aspects: access, equity, health and safety, education and participation, integrated planning, land and resource use, environmental integrity and economic well-being. The concept of mobility management was introduced as a strategy in attaining a sustainable transportation system. Basically, it deals with the so-called “soft” measures of transport (awareness campaign, coordination of existing traffic measures) in order to complement the existing hard measures (road construction).

In the field of pedestrian transport, one strategy is to encourage a user-centered space design and management so as to improve mobility. User-centered approach refers to basing management strategies on needs and desires of users and how these may be physically manifested. Thus, this paper focused on the pedestrian considering its needs, discussing the spatial environment as dictated by the relationship of movement and non-movement within the pedestrian space, the street culture created by the social interaction of the street users. These shared knowledge and meaning are produced when individuals interact in a common space (i.e. pedestrians, vendors in an urban space). At a higher level, this interaction produces

⁷ a pushcart with four wheels, usually made of wood.

a common culture which is transmitted, learned and shared, thus evolving into a distinct heritage and social tradition. The socio-cultural history of the streets provides a potential window to discover the pedestrian street culture of the past wherein the latter may provide us with design recommendations on contemporary street improvement so as to encourage more users to utilize a given space. Thus, discussion also focused on the development of walking within the Asian context as well as an overview on the vending culture that is rampant within Asian streets who is oftentimes ignored. In the Asian space, various policies should focus towards encouraging the revival of street culture as well as the humanizing of streets within the Asian context. These may be gleaned from the previous sections such as the *golodog* in the Sundanese *kampung*, creating social spaces, recognizing the importance of the *pasar* culture, to name a few.

The present morphology of Asian settlements especially within urban enclaves allows pedestrian-oriented developments. This is an appropriate jump off point in street design. The overarching concept of a forest-based street space should be the main thematic concept in creating an effective Asian street. To give a few examples, pocket-sized intimate spaces should be strategically provided along the sidewalk. Its presence signifies flexibility, encourages social contacts and maximizes interactions. The strategic placement of benches and the appropriation of vendor space on specific points along the sidewalk encourage social interaction. Segregation is also necessary in order to maximize space utilization. However, segregation of activities should take a psychological rather than physical compartmentalization to making it culturally-appropriate to Asian pedestrians. Physiological attribute such as the walking speed is higher in Tokyo as compared with other parts of Japan as well as other parts of Asia reflecting the more restless nature of Japanese. To minimize anxiousness, the appropriate combination of activities specifically at intersections should be considered so as to allow a pertinent mix. Natural elements are of course, necessary given the forest-based, animistic roots of Asians. Implementing a green sidewalk becomes a viable option. The important role played by vendors along sidewalks had been explicit and is further reinforced in this paper. Proper guidance and regulation should be in place at the national and local level allowing and allotting them space whether within the bounds of public or private space.

3. CONCLUSION

The study was able to discuss the socio-cultural underpinnings of Asian pedestrians and how these affect the use of space. Furthermore, it was able to comprehensively discuss various socio-cultural manifestations that would affect pedestrian facility design and policy development given the culturally-specific movement and non-movement behavior of Asian pedestrians. It also discussed results of surveys conducted to further evaluate the theoretical viability of the concept of the need-hierarchy. The study further recommends that a more in-depth analysis of the socio-cultural aspect be conducted as well as consider other Southeast and East Asian cities as potential case studies to be able to come up with generalizations. Another potential extension of the study would be to determine the socio-cultural issues that can be translated into workable and feasible design recommendations to be evaluated and assessed further so as to contribute to the concept of an Asian street space.

ACKNOWLEDGEMENTS

The first author is indebted to the Asian Public Intellectual Fellowship program for the financial assistance provided to conduct the empirical study in Bandung, Indonesia. The views of the author do not reflect those of the API Fellowships Program, the Nippon Foundation, the coordinating institution and the partner institutions located in the author's native and host countries.

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