Urban Streets Struggling to Survive: An Urban Design Solution

MARY ANNE ALABANZA AKERS
Department of City and Regional Planning
Morgan State University
1700 East Cold Spring Lane, Baltimore, Maryland
UNITED STATES
Maryanne.akers@morgan.edu

Abstract: - Baguio City, Philippines is an American post-colonial city designed by Architect Daniel Burnham in the early 1900's. His concept was to create a place for healing and rejuvenation for Americans that occupied the country. This study examines the present day street conditions of the downtown district in terms of competition and conflict over prime urban space. A Struggle Index was developed to measure the extent to which sidewalk and street width, pedestrian and vehicular volume, sidewalk vendor spaces, and other urban features contribute to a low quality street experience. The results show that street segments with high Struggle Index scores correlate with air pollution. To address this problem, planning and design solutions are proposed.

Key-Words: - Urban street, street metrics, air quality, urban design and planning

1 Introduction

Asian streets are often characterized by their interesting diverse uses, complex building types, textured material cultures, persistent high density and conflicting traffic/pedestrian encounters. Compared to western streets, these streets may seem chaotic and haphazard but they serve as the backdrops for urban residents' survival. These mosaic spaces are where people live, work, shop, socialize, hop on and off public vehicles, walk to a specific destination, and many other ordinary activities.

Asian streets are typically compact and the struggle for the use of limited space is an urgent problem that urban planners and designers have to confront. This paper examines the incessant struggle for the use of public spaces in downtown Baguio, a post-colonial city in northern Philippines. Once an ecologically affluent summer capital of the country, Baguio City has reached its carrying capacity and its downtown is now suffering from urban ills like uncontrolled vehicular traffic patterns, suffocating pollution, and excessive density of sidewalk vendors and users. A study of street spaces that probes into the factors contributing to the conflict is necessary in order to develop mitigating solutions to negative effects.

The site for the study is in downtown Baguio City, a town conceptualized by American architect and planner Daniel Burnham in 1906. The downtown is shaped like an urban basin with major sloping streets leading to its core. He designed the city for 25,000 residents but the city is now a regional metropolis bursting in its seams with 318, 676 people [1]. As a result of this population swell, the downtown area has lost its character as a vibrant and positive experience for residents and visitors alike. Baguio City's reputation as the top tourist destination in the Philippines is under siege.

1.1 The Struggle for Urban Space

1.1.1 Population Growth

In a report by the United Nations, 86 per cent of the world's urban growth will occur in African and Asia [2]. The Philippines has seen an annual urban growth rate of 2.81 in 2010 [3]. A similar trend occurs in Baguio City where the annual growth rate is 2.5 [4]. The pull factor that contributes to this growth is the city's position as a regional center for trade and commerce, medical services, higher educational opportunities, and tourism.

1.1.2 Motorization

An upsurge of motorization in many progressive Asian cities was observed in the 70's and 80's [5]. In the Philippines and other economically slower countries, it was only in the 1990's when increased rates of motorization occurred and continues to intensify [5]. In fact, the Philippine Bureau of Census reports that in 2007, there were 7,120 registered motor vehicles while in 2010, three years later, 10,939 were registered showing an increase of 53.6% [6].

In the case of Baguio City and many other Philippine cities, the downtown streets are not expandable, unlike in the United States where land

is plentiful. Furthermore, the rugged topography of the city prevents development to spread out. As a result, extreme congestion, crowded sidewalks, pollution, and noise are among the factors that significantly impact the quality of the urban core.

1.1.3 Sidewalk Vendors

An increase in street vending is a global urban phenomenon. Lack of gainful employment in the formal economy pushes workers to search for alternative livelihoods and street vending is one of the most viable option [7] [8]. A study of vendors in Baguio City show they stay in their sidewalk locations for an average of seven years or more, and work there ten-hour days for seven days a week [9]. This, of course, implies that they have become almost permanent fixtures in the street landscapes and take part in the struggle for urban space.

1.1.4 Pedestrians

As vendors claim spaces on the sidewalks, and vehicles clog the streets, pedestrians are left to maneuver tight spaces as they move through the urban landscape. In many streets, they are forced to walk along side with motor vehicles. In Asian cities, it is quite common to observe the blurry lines between pedestrian walking patterns and moving traffic.

Traditional government policy has been to penalize vendors because they "preclude the free flow of pedestrian traffic"[10]. The mayor of a popular city in Metropolitan Manila threatened to pour kerosene gas on vendors' sale products because it is the "most convenient and justifiable way to discourage them from plying their wares on streets and sidewalks" [11]. These punitive approaches to addressing the inevitable urban informal sector have not necessarily been effective because vendor numbers are increasing every year.

Pedestrian behavior is often related to land use and urban form [12]. The streets leading to major colleges and universities in downtown Baguio City are crowded with students, attracting vendors to take advantage of this potential market. Similarly, transportation nodes for jeepneys, a common Philippine form of public transit, are pedestrian destinations. During the evening rush hours, pedestrians can be found walking towards these nodes.

1.1.5 The Built Environment

Asian cities have transformed dramatically from colonial urban forms to vernacular articulation of multi-purpose and -use, local materials, texture, color and cultural symbols. These forms are often an expression of complex realities and conflicts [13]. For example, in downtown Baguio, one can find a tall 13-story hotel in the middle of a block with three-storied commercial buildings. The local zoning ordinances are not enforced, which result in haphazard blocks with competing uses for prime urban space.

1.2 Air Quality

Problems ensue as the demand for the use of urban spaces expands. The most evident is poor air quality. Baguio City was established as a rest and healing place for American soldiers during their occupation of the Philippines. The fresh mountain air, cool moderate climate, and abundance of natural resources contributed to its attractiveness as a place for physical, emotional, and spiritual upliftment and rejuvenation [14].

Baguio City has carelessly changed throughout the past century from an idyllic setting to one with a plethora of urban ills. A study of air pollution showed that the city suffered from extreme pollution, at levels that exceeded the US Environmental Protection Agency daily (65 μg/m3) and Filipino/USEPA annual standards (15 μg/m3) [15]. The highest concentration of pollutants was found in the early morning hours, as a result of air inversion, and the rush hours in the morning and early evening.

2. Problem Formulation

A longitudinal study of streets and sidewalk vendors was conducted in Baguio City, Philippines to better understand the urban condition. A transdisciplinary team composed of an urban planner, health researcher, nurse, air quality scientist, and social scientists examined vendors' lives and their physical environments throughout a span of ten years. The following phases were implemented as part of the larger comprehensive study:

Phase 1: Socio-Economic, Physical Environment, Location Choice (Survey of 211 vendors)
Phase 2: Self-Reported Health Condition and Physical Environment Assessment (Survey of 187 vendors and 35 downtown streets)
Phase 3: Air Quality Monitoring of 23 downtown streets
Phase 4: Health Screening (Biometric) of 10 vendors
Phase 5: Visual Analysis of 33 downtown streets

ISBN: 978-960-474-331-5

The data from these research phases were integrated, analyzed, and disseminated based on various research constructs and topics.

2.1 The Research Question

The research question for this paper is, "**Does the struggle score for each vendor site correlate with poor air quality?"** A sample of 137 vendor sites and 23 street segments are included in the analysis. Majority of the respondents are middle-aged women (82.5%) who have worked as vendors in the downtown area for close to ten years. A significant percentage (91.2%) believes that their vending set-up does not interfere with pedestrian traffic. They like their locations because of the high volume of customers that contribute to an average of US$ 7.00 profit a day.

The 23 street segments were selected based on vendor nodes and distinct street identity. They were measured for various characteristics that contributed to the development of the Struggle Index. Figure 1 represents the pedestrian nodes and street segments associated with them.

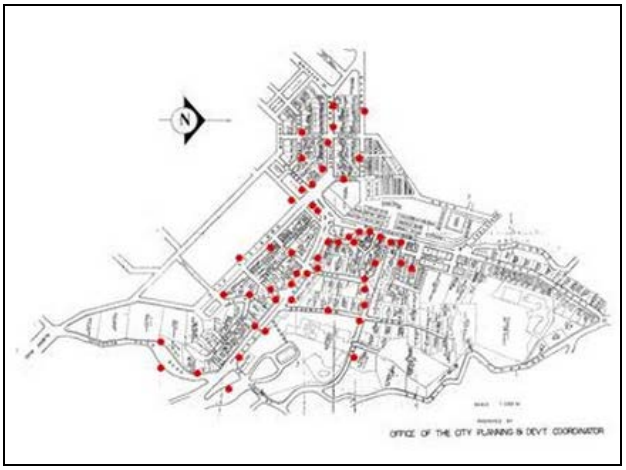

Figure 1 Vendor nodes in downtown Baguio City

2.2 The Struggle Index

Physical space is at the center of the urban struggle. An index was created to describe the extent to which street segments demonstrate competition and conflict among sidewalk vendors, pedestrians and vehicles. It is hypothesized that a high struggle score is related to polluted and low quality streets. The variables for the index and the rationale for using them include the following:

Street Slope (SS): Steep sloping streets encourage vehicles to rev up their engines which impacts air quality.

Curb height (CH): Street segments with low curb heights tend to allow pedestrians to spill over the roadway, impeding vehicular traffic flow.

Building awnings (BA): During the rainy season, vendors tend to settle in spaces that have overhangs.

Pedestrian Count (PC): In street segments that have high pedestrian counts, the struggle for space is more intense.

Vehicular Count (VC): Street segments that have high traffic volume are likely to have poor air quality.

Vehicle Speed (VS): Slow moving vehicles tend to belch more exhaust than faster vehicles.

Road Width (RW): The struggle for space in tight streets is more intense than those in wider streets.

Building Height (BH): Buildings that have several floors imply higher density of people. In downtown Baguio, these taller buildings are often used for commercial and institutional activities which high volumes of people and vehicles.

Vendor Area (VA): Vendors that have larger sidewalk vending areas contribute significantly to the struggle for space.

The formula used to calculate the Struggle Index is found below:

Struggle Index= SS/aveSS + CH/aveCH + BA/aveBA + PC/avePC + VC/aveVC + VS/aveVS + RW/aveRW + BH/aveBH + VA/aveVA

2.3 Results and Analysis

The Struggle Index ranges from 4.72 to 16.05 with a difference of 11.33, spread throughout the sample. A significant result is found between the specific street segment and the Index score ($F=28.830$, $N=137$, $p < .000$). The street segments with the lowest Struggle Index score are adjacent to each other. Their sidewalk and street widths are larger than many of the other downtown streets (Figure 2).

ISBN: 978-960-474-331-5

Figure 2 Lower Abanao Street with the lowest Struggling Index score

On the other hand, the street that is struggling the most is Session Road, the main thoroughfare. The factors that contribute to its high Struggle Index score are voluminous pedestrian and vehicular traffic, types of vendors, and sloping nature of the street (Figure 3).

Figure 3 Lower Session Road with the highest Struggling Index score

Furthermore, an analysis was conducted to examine whether the Struggle Score is correlated with air quality. A significant relationship was found with carbon monoxide (CO2) but not with particulate matter PM2.5 and PM10 ($r=.343$, $N=137$, $p<.000$). This, of course, implies that since carbon monoxide is associated with vehicular exhaust, street segments with high vehicular traffic are struggling to survive. It's interesting to note that the highest concentration of carbon monoxide is in the same segment as the street with the highest Struggling Score. More importantly, it is sloping and a pedestrian cross lane sits about 70 feet from the bottom of the street. The conflict can be observed in Figure 4.

Figure 4 Lower Session Road with the highest concentration of CO and pedestrian/vehicular conflict

3 Problem Solution

Urban design and planning is one solution to a multi-dimensional problem. Many cities have changed their downtown to suit market-driven and developers' interests [16] [17]. Local governments have provided incentives to attract the private sector in re-branding the urban core. Public-private partnerships seem to be the approach that governments take and are successful in bringing tourists and residents alike to use these places. However, there is a limit to overdependence on the private sector. Baguio City, for example, has experienced the decay of its downtown because a private conglomerate, SM Department Store, established a branch on a historic site at the top of Session Road, the main downtown spine. Its disregard for environmental degradation, severe congestion and pollution, and loss of income for local small businesses is largely responsible for the way streets are struggling. But these negative effects can be mitigated if local officials are made aware of alternative solutions. They must, however, have the political will to implement a long-term planning strategy and to strengthen and enforce codes and regulations. The following urban design and planning solutions are proven strategies that have worked in other global cities.

3.1 Pedestrianization

Pedestrianization is an urban design strategy that involves converting a street to a public space that is pedestrian-oriented rather than motor-vehicle dominated. There are varying degrees of pedestrianization. Several cities, like New York City has pedestrianized Times Square and re-configured other popular streets to increase pedestrian islands, widen sidewalks and decrease street widths to slow traffic, and create more outdoor eating places from curb lanes [18].

ISBN: 978-960-474-331-5

Baguio City will benefit from pedestrianizing Session Road, its main thoroughfare. Numerous cases around the world demonstrate the benefits of re-functioning streets as pedestrian walkways, civic spaces, and market places for local microenterprises. Furthermore, this strategy will mitigate air pollution.

3.2 Reconfiguring public transportation

One of the first steps in reducing vehicular pressure in the downtown is to conduct a city-wide spatial planning analysis. The purpose of this study is to assess the current traffic flows and to quantify patterns that clog the downtown. Such assessment will shed light on the severity of the problem, and, hopefully, local officials will seriously make complex transportation decisions with long-term impacts.

As it is, one can observe that the supply of public transportation does not match the demand. Many of the jeepneys are empty when they reach the downtown. The system is archaic and a remnant of the 1950's and 60's circulation patterns when Baguio's population was compatible with the city's infrastructure and services capacity. These empty jeepneys do not have to use Session Road to reach their passenger pick-up stops. Rather, they can circumvent the main thoroughfare and use the peripheral streets. Furthermore, the volume of public utility vehicles like taxis and jeepneys must be controlled to avoid their over-supply. A coding system that allows, on certain days, only vehicles with odd or even plate numbers to traverse the downtown. This will encourage public utility operators to seek customers in other parts of the city.

3.2 Urban Design Strategy

The local government's need for an urban design plan is essential for improving the quality of the downtown district. The lackadaisical attitude of city officials causes a haphazard default of tall massive developments jutting out in a block of historic three-storied buildings. The incongruence of current practices damages the unique character of the city's "heart". Better planning and stricter enforcement of codes and regulations will preserve the image of Baguio City as a place that is one-of-its kind..

Specific design recommendations include the following, among others:

1. Create or enhance a series of distinct places throughout the downtown district that have specific identities. Specially designed spaces that range from private to public will offer options for diverse activities. Upper Session Road can be designated as the shopping district reserved for boutique shops and quaint cafes, while the Lower Session Road, can serve as the more public space where people-watching and street performances can take place.
2. Provide public seating along Session Road. Once the street is pedestrianized, it becomes a destination place where informal social interactions spontaneously take place. Street furniture usually encourage people to linger on in a space.
3. Install street trees and sustainable landscaping (i.e., rain gardens) that soften the hardscape of concrete buildings and pavement. Attractive native plantings patched throughout the downtown add color to an otherwise bleak urbanscape. Baguio City is known as the Flower City and these simple natural features allows it to live up to its name.
4. Widen sidewalks in local streets that connect to Session Road. By considering pedestrians as the priority, the downtown becomes a more comfortable destination point rather than a pass through. Wider sidewalks will allow restaurants and other types of eateries to offer outdoor spaces for their customers.
5. Celebrate the local heritage by using symbols and public arts that represent the indigenous culture. These symbols can be etched on coordinated signage, landscape installations, posts and other street furniture. Public art installations highlight the expressive expression of Baguio's residents.

ISBN: 978-960-474-331-5

4 Conclusion

The years are numbered for struggling streets in downtown Baguio. The city's heart will experience a seizure if nothing is done at this point to mitigate the negative effects of air pollution and traffic/pedestrian congestion. The city that Daniel Burnham once conceived as a pleasant resort town for healing and rejuvenation will lose its vitality. It is very ill right now. Unless the local officials commit to revitalizing the most important district in the city, Baguio's downtown will eventually die. It is on the verge of doing so right now.

References:

[1] Baguio City official website. Available at: http://www.citypopulation.de/php/philippines-admin.php?adm2id=141102

[2] United Nations News Center. "Africa and Asia to lead urban population growth in next 40 years – UN report". Available at http://www.un.org/apps/news/story.asp?NewsID=41722#.UfjpMo21G8A

[3] Trading Economics. *Urban Population Growth (Annual %) in Philippines*. Available at: http://www.tradingeconomics.com/philippines/urban-population-growth-annual-percent-wb-data.html

[4] National Statistical Coordination Board. NSCB StatWatch Baguio City. 2013. Pp.1-2

[5] Barker, Paul. Urban Transport in Asia: Problems and Prospects for High-Density Cities. *Asia-Pacific Development Monitor*. Vol. 2, Number 1, 2000, pp 33-66.

[6] National Statistical Coordination Board, *op.cit.*, p. 1.

[7] Akers, Mary Anne Alabanza and Timothy Akers. Urbanization, Land Use, and Health in Baguio City, Philippines in Greg Guest (ed.) *Globalization, Health, and the Environment: An Integrated Perspective*. Altamira Press: Lanham, 2004.

[8] Bhowmik, Sharit K. Street Vendors in Asia: A Review, *Economic and Political Weekly*, May 28-June 4, 2005.

[9] Akers, Mary Anne Alabanza, Timothy Akers, Richard Sowell, Brandon Cassity, and Luke Naeher, Is urbanization affecting our air quality and health? A study of informal vendors in Philippine urban landscapes. *Life in the Urban Landscape: International Conference for Integrating Urban Knowledge & Practice*. Gothenburg, Sweden. May 29 – June 3, 2005.

[10] City of Baguio City Council, *Implementation of the Policy on Sidewalks*, Resolution Number 23, Signed during the Regular Session Held on January 25, 1999.

[11] Calalo, Arlie, Monumento vendors vow to fight Fernando, *Manila Standard Today*, August 20, 2002.

[12] Hidayati, Nursyamsu, Kasem Choocharukul, and Kunihiro Kishi, The Impact of Street Vendors Activities on Pedestrian Behavior, *3rd Asian Transportation Research Society Symposium*, Bankok, Thailand, August 27, 2010.

[13] Watson, Jini Kim. *The New Asian City: Three Dimensional Fictions of Space and Urban Forms*. University of Minnesota Press, 2011.

[14] Reed, Robert Ronald. R. City of Pines: The origins of Baguio as a colonial hill station and regional capital (2nd edition), A-Seven Publishing, 1999.

[15] Cassidy, Brandon, Mary Anne Alabanza Akers, Timothy Akers, Daniel Hall, P.Barry Ryan, Charlene Bayer, and Luke Naeher. Particulate matter and carbon monoxide multiple regression models using environmental characteristics in a high diesel-use area of Baguio City, Philippines, *Science of the Total Environment*, 381(1-3), 2007, 47-58.

[16] Turner, Robyn. The politics of design and development in the postmodern downtown. *Journal of Urban Affairs*, Volume 24(5), 2002, 533-548.

[17] Loukaitou-Sideris, Anastasia. The Negotiated Plaza: Design and Development of Corporate Open Space in Downtown Los Angeles and San Francisco. *Journal of Planning Education and Research*. Vol. 13(1), 1993, 1-12.

[18] New York Department of Transportation. *Measuring the Street: New Metrics for 21st Century Streets*. New York Department of Transportation. 2008.

ISBN: 978-960-474-331-5