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Evaluating New Urbanism's Walkability Performance:

A comprehensive approach to assessment in Saifi Village, Beirut, Lebanon

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PAPER NO. 7

Saifi Village, Downtown Beirut

ABSTRACTS

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Keywords: new urbanism; walkability; Beirut city centre redevelopment; Saifi village; Solide`re

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تقييم مقدرة "الحضرية الجديد" علي تحفيز سلوك المشي

مدخل شامل للتقييم في منطقة الصيفي السكنية – وسط بيروت – لبنان

د/ خالد السيد محمد الحجلة

قسم الهندسة المعمارية – كلية الهندسة – جامعة الإسكندرية – الإسكندرية – مص ر

كلية الهندسة المعمارية – جامعة بيروت العربية – بيروت – لبنان

الملخص

يعتبر تحفيز سلوك المشي 'Walkability' هو أحد أهم ملامح الحضرية الجديدة 'New Urbanism'، ويشمل تقييم مجموعة العوامل التي تؤثر علي مستوي أداء هذا السلوك أطر تمتد لما هو وراء الحدود المرسومة للمناطق المنماة تبعاً لمبادئ هذا التوجه. يقدم البحث مدخلاً شاملاً لتقييم المقدرة علي تحفيز سلوك المشي معتمداً علي الدمج بين المفاهيم النظرية والتطبيقية لهذا السلوك.

يعمل هذا المدخل علي الدمج بين المستويين الشامل والدقيق كمستويين مختلفين ومتكاملين للدراسة. فالمستوي الشامل يعني بتقييم الإطار الحضري الكلي المسؤول عن توليد الإحتياج لسلوك المشي والذي يؤثر بطريقة غير مباشرة علي تحفيز هذا السلوك في المناطق المنماة تبعاً لمبادئ الحضرية الجديدة. كما يعني المستوي الدقيق بتقييم مختلف أُسُس الحضرية الجديدة علي إعتبارها إمَّا تخلق الإحتياج لهذا السلوك أو تشجعه و تنميه في إطار هذه المناطق. يستخدم البحث هذا المدخل لتقييم أداء مختلف أسس الحضرية الجديدة التي تؤثر علي تحفيز سلوك المشي في منطقة الصيفي السكنية – أحد المناطق المنماة وفقا لقواعد الحضرية الجديدة بوسط مدينة بيروت.

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Keywords: new urbanism; walkability; Beirut city centre redevelopment; Saifi village; Solide`re

1. Introduction

According to Steuteville (2004), 'New urbanism is a reaction to sprawl. It is based on principles of planning and architecture that work together to create human-scale, walkable communities' (Carroll et al, 2007). This vision correlates with a number of urbanization concepts, such as Neotraditional Urbanism and Transit-Oriented Development. Although these concepts share the same objective, namely to create a community that depends mainly on walking, New Urbanism is much more comprehensive in its scope; it is more detailed with regard to all the physical factors that configure the physical settings of daily life interactions.

The Charter for New Urbanism sets out a number of principles that together form a set of values that underpin the performance of a New Urbanism community. Walkability is one of the key principles to be addressed at the community level. The Congress for New Urbanism (2007) highlights that 'New Urbanism is one philosophy that is often followed in order to create a landscape that accommodates the pedestrian and makes walking more enjoyable because ' ''streets are safe, comfortable, interesting places for people to walk and meet'' '. As such, walking is closely linked to the New Urbanism community perspective, in that a walking-based community creates a way of life that supports many other stated New Urbanism values, and thus, the value of walkability is in continuous interaction with the other values.

Saifi Village is a residential compound in downtown Beirut. Its physical structure follows the Principles of New Urbanism development: it is based on neo-traditional Lebanese architectural and spatial treatments, and aspires to the principle of walkability as a predominant lifestyle.

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Despite this, the walkability performance parameters in Saifi Village are less than expected based on the high quality of its physical features. This negatively affects the overall performance of this residential community as a New Urbanism development. This paper tackles this mismatch of aspiration and realization in Saifi Village, and looks at the under-performance of its physical setting in relation to walkability.

2. Urban Framework of Downtown Beirut

The reconstruction of downtown Beirut after the Civil War (1975–1990) is charged with much more than just physically re-building a destroyed setting. The renaissance of the downtown has acquired a symbolic significance, representing no less than the re-birth of Lebanon as a major focal point of businesses, services and tourism in the region (Economic and Social Commission for Western Asia, 2005). This vision has had a direct impact on the formulation of a new urban framework for the downtown area. Moreover, it frames the re-development of the downtown as a comprehensive development scheme, with special guidelines, codes and ordinances. This has led to the project being entrusted to a shareholding company, Solide`re, under the direct guidance of the ex-Prime Minister Hariri (Fawaz and Peillen, 2003). Solide`re's strategy was to stimulate high quality real estate development in the city centre, and it thus built a number of state-of-the-art buildings and urban developments, including United Nations House, Saifi Village, the embassy compound and the Rue de France complex (Solide`re, 2005).

Figure 1: Location of Saifi Village in downtown Beirut.

Saifi Village is regarded as one of the leading residential re-development projects within Beirut's downtown area (Figure 1). It merges new design with the traditional Lebanese style, with existing buildings restored to their original state to contribute to a neo-traditional sense of place. The public realm design and landscaping convey an appealing and communal ambience of gardens, courts and walkways. The commercial success of the project led Solide`re to initiate concepts for extensions of Saifi Village. A number of development lots were sold using New Urbanism concepts (Solide`re, 2005).

The detailed application of 'walkability' in Saifi Village as an aspect of New Urbanism needed to extend beyond the scheme itself to influence the wider re-design of the urban spatial structure of downtown Beirut. The success of this strategy can be assessed by analyzing three main urban attributes of the downtown: 'urban form', 'urban interactions' and 'organizing principles' (after Bryce et al, 2005).

2.1. Urban form

The urban form of downtown Beirut is addressed by the spatial configuration of the fixed elements in the Solide`re re-development plan. This includes the pattern of land use and its use density, as well as the spatial design of the transport and communication infrastructures. The re-development plan involves four types of development, with different characteristics, land use and spatial formulations for each type (Figures 2 and 3).

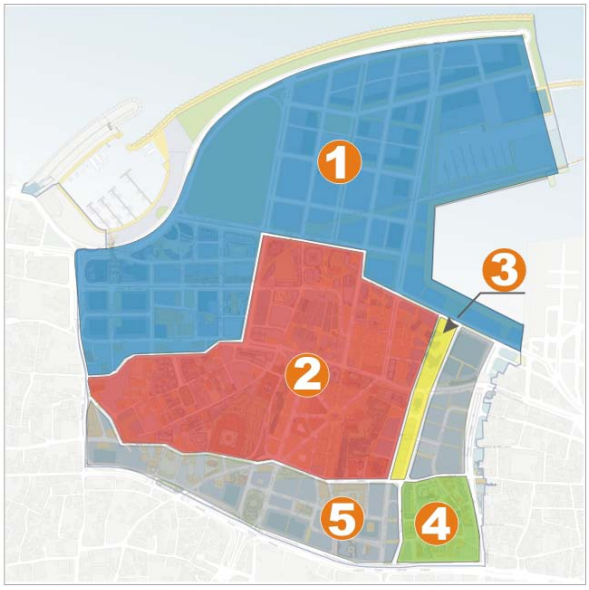

Figure 2: Main constituents of downtown Beirut: (1) Biel, (2) Foch-Allenby, (3) Martyr's Square, (4) Saifi Village, (5) the edge of the Beirut re-development area.

-***The first*** type is a mixed-use development, with mainly retail shops and offices. This type is concentrated at the centre of the re-development area; it is the Beirut Central Business District known as the Foch-Allenby area. It has a coherent physical structure, with well-defined streets at 'El-Nejma' square 'Sahet el-Nejma'. Most of this area is dedicated to pedestrian use only, with fully articulated landscaping elements to promote this atmosphere.

-***The second*** is the 'Biel' zone: a rehabilitation of the North Coast (Linord Project), planning and

developing hundreds of hectares of reclaimed land over the sea (Fawaz and Peillen, 2003). This area is devoted to mega-structure developments. The ordinances applied to this zone allow the maximum building heights, resulting in development of this area as a cluster of highrise buildings with free spatial expression. Most of the remaining land is allocated to extremely luxurious residential developments ('Marina' zone).

-***The third*** is Martyr's Square. This is a monumental public space located at the right side of the re-development area. It has great value both historically and nationally. This area dates back to medieval times and has growing importance as a witness to various events that have occurred in the city. These events each give the square its unique identity and highlight it as the main living-room of Beirut. The strong identity is intensified by the pureness of its form, based on a rectangular plan with firm expression of its spatial enclosures.

-***The fourth*** area is Saifi Village. This is a residential community, located at the lower right corner of the re-development plan of downtown Beirut proposed by Solide`re. The community was erected in two phases. The first is a cluster of five buildings with facades along the streets. These are organized in a traditional way around a garden courtyard with a restored three-floor flat building that dates to the 1940s in the centre (Solide`re, 2005). The second phase is an extension of the first. Its spatial organization follows the linear organization that distinguishes downtown Beirut's radial planning.

2.2. Urban interactions

Urban interactions within downtown Beirut refer to the flow of goods, people, services and information between different locations within this area. These have direct influences on downtown walkability, related to the typology of urban form of downtown Beirut, as previously discussed. In examining this urban form, we can distinguish two scales of interactions:

- Macro-scale interactions, which are related to different types of interactions among the four main areas of downtown Beirut's urban form, and
- Micro-scale interactions, which are related to different types of interactions within the development areas of downtown Beirut.

2.3. Organizing principles

Organizing principles are the values upon which the re-development of downtown Beirut is formulated. These values are derived from the comprehensive

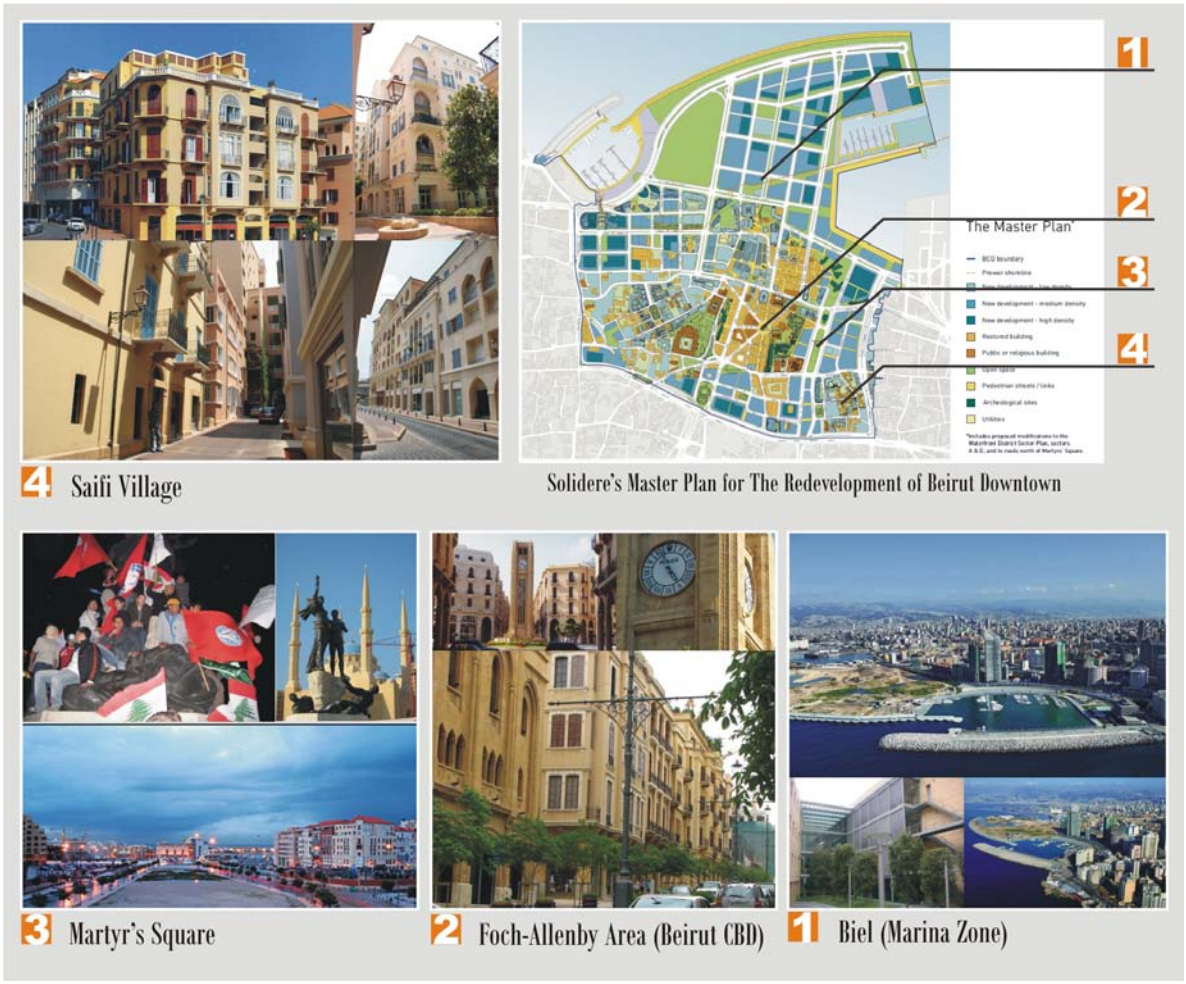

Figure 3: Urban framework of downtown Beirut.

vision of downtown re-development to create high-quality urban developments using diverse and mixed land uses. This is based on Solide`re's vision of the role that downtown Beirut must play after the Civil War (1975–1990). It aims at creating mixed-use high-quality developments that are capable of attracting foreign investment in addition to tourists. This policy actually achieved its goals: in 2003, more than 1 million tourists visited Lebanon, the highest number in 24 years, and from January to July 2004, more than 730 000 foreigners visited Lebanon, up from the 527 000 visitors over the same period in 2003 (Economic and Social Commission for Western Asia, 2005). Despite the political instability in Lebanon since 2005, Solide`re is continuing with its policy.

3. Saifi Village: New Urbanism Perspective

Saifi Village is a main part of the re-development plan of downtown Beirut. When applying the principles of New Urbanism's Charter (for example, traditional neighbourhood structure, quality architecture and urban design) to this residential community, there is a large degree of compatibility. This is reflected not only by different physical settings, but also by spatial articulation and landscaping elements (Figure 4). These are orchestrated to deepen the sense of community and to promote other values associated with New Urbanism (for example, connectivity, walkability, quality of life).

Figure 4: Saifi Village: Community main plaza.

3.1. Defining open space

The two phases of neighbourhood construction clearly define the open-space structure. Two mai types of open space are used: corridors and small nodes. However, the main focal open space I located at the heart of the neighbourhood as community reference. The open spaces are organize in a hierarchy, starting from public/privat space (building entrances) to much more public (pedestrian corridors and small nodes) to the most public space in the community (main plaza) There is a smooth transition between an intimate an an urban scale moving through the neighbourhood. The complete definition of open-space structure increases the feeling of intimacy and support community social identification and coherence.

3.2. Architecture style

The neighbourhood, in its two phases, follows neo-traditional Lebanese architectural expression. Its architecture style is inspired by the Beirut architecture of the 1950s. A number of traditional Lebanese architectural elements are used: traditional Lebanese triple arcades, wooden windowframes, arabesques, old wrought iron, pillars, diverse decorations and red clay tiles (Solide`re, 2005). The use of materials and pastel colours, ranging from reddish ochre and yellow to white and blue, reinforce the feeling of local identity.

Figure 5: Saifi Village: Walkability facilities.

3.3. Amenities and landscaping elements

The Saifi community obtains its 'urban village' character from the type of landscaping elements, and the way it uses these elements (Figure 5). The special treatments for landscaping elements help create a cheerful and distinctive outdoor environment. Different materials, colours and treatments have different uses: roads are paved with basalt, sidewalks with brick and pedestrian areas with cobblestones. Different street furnishings, such as street lighting, signage and bollards, are used to ensure a sense of traditional place (Solide`re, 2001). In addition, a number of amenities are placed in open spaces to support outdoor vitality. These amenities vary according to their scale, location and role, including sports courts, marketplaces, parking facilities, children's playgrounds and seat benches.

4. Assessing Walkability

McMillan (2005) provides a conceptual framework for studying urban form, including a way to measure pedestrian accessibility. The conceptual framework clarifies the relationship between urban form and a child's trip to school. It asserts that urban form does not directly impact how a child gets to school, but rather that there is a set of mediating and moderating factors (Stevens, 2005). The mediating factors are neighbourhood and traffic safety, as well as available

household transportation options (including distance from home to school and number of cars at home). Moderating factors include parental attitudes, social or cultural norms and socio-demographic characteristics (McMillan, 2005).

Moudon and Lee (2003) also provided a conceptual framework for measuring walkability. This is based on their study of a number of methods called environmental audit instruments: tools for inventorying and assessing environmental conditions that are associated with walking (Moudon and Lee, 2003). The framework focuses on characteristics of place, which include the origin, destination and area that a pedestrian walks within (Stevens, 2005). This idea of using the characteristics of where a person starts or ends his/her trip gets at the elements that control why urban form affects travel behaviour. This is similar to what McMillan proposed when she addressed mediating factors.

4.1. Approaches to measuring walkability

The Partnership for a Walkable America developed a one-page questionnaire with five easy-toanswer questions that produces a score from 5 to 30 points (Stevens, 2005). The questionnaire makes people aware of what makes a community pedestrian-friendly by asking the following questions: Did you have room to walk? Was it easy to cross streets? Were drivers well behaved? And Were safety rules easy to follow (PWAPBIC et al, 2005)? Each of these questions can be related to one of the walkability indicators used in this neighbourhood study, specifically sidewalk conditions, pedestrian crossing aids, safety of the area, and traffic control devices and signs.

A much more practical methodology for studying walkability was developed by Terri Pikora et al. Their research approach involved an observation-based tool: an environmental audit instrument (Stevens, 2005). The audit instrument, created by Pikora et al (2003), is a systematic pedestrian and cycling environmental scan (SPACES) that uses checklists to collect data in the field. The SPACES tool is a comprehensive inventory of the characteristics of the roadway and elements surrounding it. Researchers working on developing this tool first categorized all the different environmental factors that could affect walking into four groups. These are functional (physical attributes of the street), safety (characteristics of a safe environment), aesthetic (elements such as trees or gardens) and destination (relationship of neighbourhood services to residences). To assign weights to different walkability indicators, interviews and panel discussions with local experts were held to reach a consensus on the factors that most affect whether people walk or not. Factors concerning personal safety, aesthetics and having a destination to travel to were determined to be the most important elements (Pikora et al, 2003). This methodology developed a point-scoring system for assessing walkability performance (Stevens, 2005), as shown in Table 1.

The performance of these indicators is closely related to how well New Urbanism's aspects are applied to communities. These aspects are classified as either 'walkability generators' or 'walkability catalysts'. The first category consists of New Urbanism aspects that are responsible for generating 'walking need', including mixed-use buildings and diversity, mixed housing and increased density. The second category plays a different role. It is responsible for configuring the setting in a way that supports 'walkability', and includes connectivity, quality of architecture and urban design, smart transportation, sustainability and quality of life. Traditional neighbourhood structure plays a dual role as a walkability generator and catalyst (Table 2).

Table 1: Walkability indicators (point scoring system)

1.	*Attractive for Walking*		7.	*Land Uses*		14.	*Traffic Control Devices*
	Strongly Agree	8		1 point per use			1 point per device present
	Agree	6	8.	*Number of Traffic Lanes*		15.	*Transit Stops*
	Neutral	4		1 or 2	2		Yes 1
	Disagree	2		more than 2	1		No 0
	Strongly Disagree	0	9.	*Buffers Present?*		16.	*Walk Through Parking Lots*
2.	*Safe for Walking*			1 point per buffer			Yes 0
	Strongly Agree	8	10.	*Speed Limit*	2		No 1
	Agree	6		less than 20 mph	1	17.	*Crossing Aids*
	Neutral	4		20 to 30 mph	0		1 point per aid present
	Disagree	2		greater than 30 mph		18.	*Lighting*
	Strongly Disagree	0	11.	*Building Setbacks?*			fewer than 3 sources 0
3.	*Traffic Volume*			less than 10 feet	2		3-6 sources 1
	High	1		10-20 feet	1		greater than 6 sources 2
	Low	0		greater than 20 feet	0	19.	*Number of Street Trees*
4.	*Sidewalk Condition*		12.	*Path Setbacks?*			fewer than 5 trees 0
	Excellent	8		less than 1 feet	0		5-10 trees 1
	Good	6		1-3 feet	1		greater than 10 trees 2
	Average	4		3-10 feet	2	20.	*Driveways*
	Fair	2		greater than 10 feet	3		fewer than 5 driveways 2
	Poor	0	13.	*On Street Parking?*			5-10 driveways 1
5.	*Segment Continues?*	1		both sides	2		
6.	*Sidewalk Complete*	4		one side 1 none	0		

Based on Stevens (2005).

Table 2: Walkability matrix (correlation between different New Urbanism aspects (Walkability generators and catalysts) and walkability indicators)

	New Urbanism Aspects \ Walkability Indicators	Attractive for Walking	Safe for Walking	Traffic Volume	Sidewalk Condition	Segment Continues?	Sidewalk Complete	Land Uses	Number of Traffic Lanes	Buffers Present?	Speed Limit	Building Setbacks?	Path Setbacks?	On Street Parking?	Traffic Control Devices	Transit Stops	Walk Through Parking Lots	Crossing Aids	Lighting	Number of Street Trees	Driveways
a. Walkability Generators	Mixed-Use & Diversity	■	■	■				■								■			■		■
	Mixed Housing		■					■								■					■
	Increased Density		■	■				■		■		■		■	■	■			■		■
a/b	Traditional Neighborhood Structure	■		■	■		■	■	■	■	■	■	■	■	■			■			
b. Walkability Catalysts	Connectivity	■	■			■	■	■								■					■
	Quality Architecture & Urban Design	■			■	■	■	■		■		■	■					■	■	■	
	Smart Transportation			■					■		■			■	■	■		■			■
	Sustainability			■				■								■				■	
	Quality of Life	■	■		■		■		■	■						■		■	■	■	

Source the Author

5. Assessing Walkability in Saifi Village

The assessment of 'walkability' in Saifi Village incorporates two compatible steps. The first is to evaluate the performance of walkability generators and the second is to evaluate walkability catalysts. However, downtown Beirut's re-development plan, manipulated as one entity under the comprehensive vision of Solide`re, and its correlated interwoven urban framework, requires that this evaluation be applied at two different scales: macro and micro.

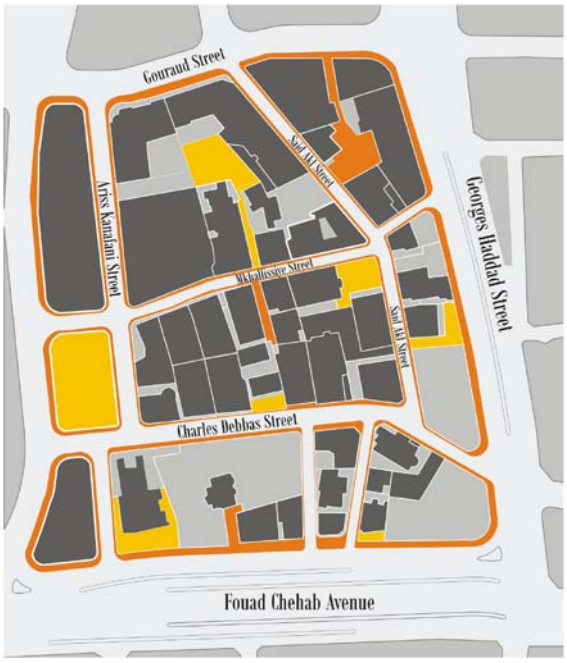

Figure 6: Saifi Village: Spatial structure.

5.1. The performance of walkability generators

Walkability generators are related to 'mixed-use', 'diversity' and 'density', urban values applied at a macro scale to downtown Beirut, and at micro scale to Saifi Village (Figure 6). The influence of these values varies according to their scale of application.

The urban framework discussed earlier shows that mixed-use and diversity are among the main features that distinguish the urban development pattern of downtown Beirut. Solide`re's target is to sustain downtown livability and richness based on complex and diverse land uses and a mixture of different development patterns. However, the urban form of downtown Beirut and its related land uses shows a contradiction in achieving this at both the macro and micro scales. The diversity and mixture of land uses is achieved at a macro scale among all the main constituencies of the downtown, but this value is achieved less within a single development area. This has considerable effects on a number of associated values, such as walkability.

The Saifi community was originally designed to serve two main functions and their related amenities. Housing is the predominant function all over the village, and the community amenities are mainly used for this function. However, a number of galleries and art shops are distributed along pedestrian streets in what is called the Artists' Quarter. The scale of the commercial activities is neither large nor effective enough to create a complex community. This limited mixture of uses and amenities, and the narrow range of diversity, do not generate walking behavior within the community. On the other hand, certain frequent events (for example, weekly open market) and

festivals are able to attract a number of external visitors, affecting the walkability of the community at these times.

Based on New Urbanism principles, the community was designed as a residence for a range of middle-income people. Once the project's first stage was accomplished, the target residents of the project changed. It has become a fashionable housing community, and the unit price has doubled. This drastically changed the projects' target residents in its second stage. The community has become high-income and filled with luxury housing. This monotype residence community negatively affects community diversity, and, consequently, walking behaviour. This type of community structure influences one of the major New Urbanism perspectives in the Saifi Village community.

The change of target residents has also caused population densities to decrease. Many owners are using their houses in Saifi Village as summer residences, especially those who live abroad, including Arabs from the Gulf area. This decreases the population density, and consequently reduces the opportunity to create the complexity needed to generate walking behaviour.

5.2. The performance of walkability catalysts

The performance of walkability catalysts is related to the urban values of 'connectivity' and 'high-quality architecture and urban developments'.

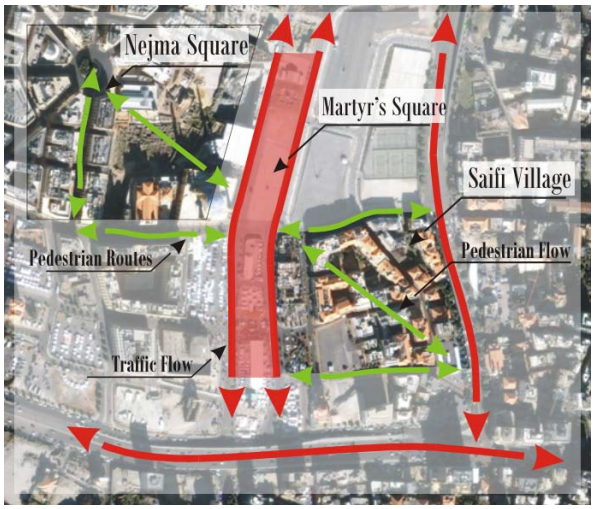

Figure 7: Saifi Village: Connectivity constraints of downtown Beirut.

Macro-scale connectivity is related to interactions among the four main constituents of the Beirut downtown urban form: Beirut Central Business District (CBD), Biel, Martyr's Square and Saifi Village (Figure 7). These interactions are supported by a network of roads that link these adjacent urban features. The accessibility performance of this network is positive in linking all of the three physically structured developments (Beirut CBD, Biel and Saifi Village); its existing performance is negatively affected by the linkage between Martyr's Square as a spatial development area and the rest of the downtown elements. The volume of traffic passing through the main roads surrounding and cutting the Square weakens its role as a linkage feature at the heart of the downtown area. On the other hand, Saifi Village stands as a separate development parcel apart from other downtown development areas. These areas are on opposite sides of Martyr's Square, which physically affects the overall coherence of urban interactions among different downtown developments. Moreover, the volume of traffic and the width of streets encompassing Martyr's Square deepen this sense of isolation.

Micro-scale connectivity is concerned with interactions within the development areas of downtown Beirut. These differ according to the type of development. Both Beirut CBD and Saifi Village are based on neo-traditional patterns of development, which appreciate pedestrian movement as the major generator of interactions. This concept is directly reflected in aspects of spatial articulation, form constitution and types of land use in these areas. This is clear in the human scale pedestrian streets, the high quality of architectural details and the street furniture. On the other hand, car-oriented development dominates the 'Biel' zone, dictating different types of internal interactions, whereas the interactions within Martyr's Square are influenced by the role it plays in the community. This is a place for expressing opinions and sharing political and social points of view, which influences the types and frequencies of the square's internal interactions, especially on sit-in days. Then, mass-scaled interactions prohibit vehicles from passing through the square, and it becomes an arena exclusively for pedestrian interactions.

Solide`re's policy (to improve the quality of downtown developments by initiating leading projects with recognized urban quality) has a positive influence on the overall quality of architectural and urban developments in the Beirut city centre. These projects include signal buildings, such as the United Nations House; retail and office headquarters; street cafe´s, such as the Foch-Allenby area (the district of Beirut Central District (BCD) that was built during the French mandate in the late 1920s and early 1930s); and residential developments such as Saifi Village. These models of development range from either an appropriation of tradition or intensified modernism (Economic and Social Commission for Western Asia, 2005). Within the context of the former, tradition is represented by blunt historical reference, red-tiled roofs and canopies, and arches of various proportions and sources. Modernism, on the other hand, is reduced to high-tech structures associated with glass boxes that are totally inappropriate to the local climate. The former is mainly represented in the pedestrian oriented

Table 2: Walkability assessment matrix applied to Saifi Village community ([✓] positive influence, [×] negative influence and [■] neutral influence)

New Urbanism Aspects			Attractive for Walking	Safe for Walking	Traffic Volume	Sidewalk Condition	Segment Continues?	Sidewalk Complete	Land Uses	Number of Traffic Lanes	Buffers Present?	Speed Limit	Building Setbacks?	Path Setbacks?	On Street Parking?	Traffic Control Devices	Transit Stops	Walk Through Parking Lots	Crossing Aids	Lighting	Number of Street Trees	Driveways
Walkability Indicators																						
a. Walkability Generators	Mixed-Use & Diversity	Macro Scale	✓	✓	×				✓											✓		✓
		Micro Scale	×	×					×								■			×		✓
	Mixed Housing			×					×								■					✓
	Increased Density			×	×				×		✓		✓		×	×	■			×		✓
a/b	Traditional Neighborhood Structure		✓		×	✓		✓	×	✓	✓	✓	✓	✓	×	■			✓			
b. Walkability Catalysts	Connectivity	Macro Scale	×	×			×	×	✓										✓			×
		Micro Scale	✓	✓			✓	✓	×								■		✓			■
	Quality Architecture & Urban Design		✓			✓	✓	✓	✓		✓		✓	✓					✓	✓	✓	
	Smart Transportation				✓					✓		✓			×	■	■		✓			✓
	Sustainability				✓				×								■				✓	
	Quality of Life		✓	✓		✓		✓		✓	✓						■		✓	✓	✓	

areas (Foch-Allenby area and the Saifi Village New Urbanism development), whereas the latter is mainly spread along the reclaimed land at 'Biel' (Marina zone). Other approaches have emerged to counter these superficial architectural statements. They display an influential character that could be called situated modernism (Economic and Social Commission for Western Asia, 2005). These include such buildings as the Banque Audi headquarters in BCD.

We use a matrix (Table 3) to show a nonnumerical assessment of the 'Walkability' performance in Saifi Village. The matrix correlates aspects that shape the New Urbanism perspective in the community to walkability indicators. It highlights the influence of different aspects in one of three ways: positive, negative or neutral influence. The matrix makes it easy to study each walkability indicator individually.

Mkhallissiye Street

	Walkability Indicators	P
1.	Attractive for Walking	4
2.	Safe for Walking	4
3.	Traffic Volume	0
4.	Sidewalk Condition	8
5.	Segment Continues?	1
6.	Sidewalk Complete	4
7.	Land Uses	2
8.	Number of Traffic Lanes	2
9.	Buffers Present?	1
10.	Speed Limit	1
11.	Building Setbacks?	2
12.	Path Setbacks?	2
13.	On Street Parking?	0
14.	Traffic Control Devices	3
15.	Transit Stops	0
16.	Walk Through Parking Lots	1
17.	Crossing Aids	2
18.	Lighting	2
19.	Number of Street Trees	1
20.	Driveways	2
	Total Points	**41**

Figure 8: Walkability aspects of Mkhallissiye Street, Saifi Village.

Said Akl Street

	Walkability Indicators	P
1.	Attractive for Walking	6
2.	Safe for Walking	6
3.	Traffic Volume	0
4.	Sidewalk Condition	8
5.	Segment Continues?	1
6.	Sidewalk Complete	3
7.	Land Uses	2
8.	Number of Traffic Lanes	2
9.	Buffers Present?	1
10.	Speed Limit	1
11.	Building Setbacks?	2
12.	Path Setbacks?	1
13.	On Street Parking?	0
14.	Traffic Control Devices	2
15.	Transit Stops	0
16.	Walk Through Parking Lots	1
17.	Crossing Aids	3
18.	Lighting	1
19.	Number of Street Trees	1
20.	Driveways	2
	Total Points	**44**

Figure 9: Walkability aspects of Said Akl Street, Saifi Village.

This can be used to determine the influences of the community's New Urbanism perspective on a certain walkability indicator.

- Reading the matrix vertically shows that 'Land Use', as a walkability indicator, is the most negatively configured aspect in the Saifi community. Moreover, 'Transit Stops' are not influenced by any of the New Urbanism features.
- Reading the matrix horizontally shows that 'Quality Architecture & URBAN DESIGN' has the most positive influence on all the walkability indicators. However, all aspects that work as 'Walkability Generators' (mixed-use and diversity, mixed housing and increased density) have the most negative influence.

The influences of 'Mixed-Use and Diversity' and 'Connectivity' vary considerably according to their scale of application. The macro-scale application of 'Mixed-Use and Diversity' to downtown Beirut as a walkability generator has a positive impact, whereas its micro application to 'Saifi Village' has a negative impact. Meanwhile, the micro-scale application of 'Connectivity' to downtown Beirut as a walkability catalyst has a negative impact, and its application to 'Saifi Village' has a proven positive influence.

We use the walkability indicators' point-scoring system to evaluate walkability performance in Saifi Village. We follow this micro-scale application for all the aspects that formulate New Urbanism's perspective of Saifi Village, and apply this score system to two internal streets in Saifi Village: Mkhallissiye (Figure 8) and Said Akl (Figure 9). This numerical evaluation is an integral part of the non-numerical matrix shown in Table 3.

The score system assessment applied to New Urbanism's features in Saifi Village supports the previously described micro-scale evaluation of both walkability generators and catalysts. It shows the negative influence of 'Walkability Generators', and the positive influence of 'Walkability Catalysts' in the Saifi Village community.

Conclusions

We develop a Walkability assessment methodology based on an understanding of the conceptual interchangeable influences among all of the New Urbanism community features. We classify these features into two main groups. The first is responsible for generating walking behaviour, whereas the second acts to support and catalyse this activity. The assessment method incorporates two steps: a non-numerical assessment matrix that correlates the community's New Urbanism features to a list of walkability indicators, and a numerical assessment of walkability indicators in specific urban spots.

We use this assessment methodology to evaluate the 'Walkability' performance of Saifi Village, a New Urbanism community in downtown Beirut. The assessment is based on understanding the urban framework within which the Saifi community is formulated. This adds a new dimension to the scope of evaluation. We discuss two scales of evaluation within

which we address walkability generators and catalysts. The macroscale evaluation is concerned with the configurations of downtown Beirut's urban areas, whereas the micro-scale evaluation is related to urban features that shape the Saifi community itself.

The urban framework of downtown Beirut shows that, while 'mixed-use and diversity' urban values have positive effects at the macro-scale and play a vital role as walkability generators, the 'connectivity' between different urban constituents of downtown Beirut's development has a negative effect and performs poorly as a walkability catalyst at this scale.

The micro-scale evaluation concludes that the walkability generators' performance, while directly related to 'mixed-use and diversity, mixed housing and increased density', has a profound negative effect on overall walkability performance compared with walkability catalysts performance, which is directly related to connectivity, quality of architecture and urban design, smart transportation, sustainability, quality of life and traditional neighbourhood structure. The numerical assessment used to evaluate the performance of 'walkability catalysts' on two main streets (Said Akl and Mkhallissiye) in Saifi Village is an integral part of the evaluation process, and supports the validity of this conclusion.

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PUBLICATION DOCUMENTS

Paper No. 7

Editorial

URBAN DESIGN International (2009) **14,** 137–138. doi:10.1057/udi.2009.21

We are pleased to announce that *URBAN DESIGN International* has been selected for coverage by Thomson Reuters. Beginning with Volume 13(1) 2008, the journal has been accepted for abstracting and indexing in the Arts and Humanities Citation Index®. This significant achievement is in recognition of the journal's high standards of publication and editorial content since its launch in 1996. We are most grateful to our readers and contributors, editors and referees. Our profound appreciation also goes to those who have always helped us with their spirit of academic solidarity disregarding to the differences of backgrounds and credos, as well their geographical locations. On this occasion, we would like to summarise the journal's key characteristics; the journal covers all fields of the urban design discipline and is a scholarly publication with a strong practitioner emphasis. It is relevant for all of those involved in architectural and planning education and practice. It is relevant for urban designers, architects and landscape architects, planners, surveyors, policy makers, engineers and all professionals concerned with urban development and design. At the same time, the journal seeks to publish the best international articles in the field.The third issue of volume 14 includes three quite different papers that focus on walkability, museality and urban renewal in the context of urban design.In the first paper, Khalid S. Al-Hagla returns to the New Urbanism idea that initiated the urban design movement in the United States in the early 1980s and has been revisited in a number of the *URBAN DESIGN International* issues (Talen, 2006; Biddulph, 2008). According to one of the key principles of the New Urbanism charter, 'streets and squares should be safe, comfortable and interesting to the pedestrian. Properly configured, they encourage walking and enable neighbours to know each other and protect their communities' proposing that the walkable street and neighbourhood should be the essential element of urban design (Leccese and McCormick, 2000). In the paper, Al-Hagla introduces a comprehensive assessment methodology for evaluating the 'walkability' performance, describes its application and attempt to tackle mismatch between the aspiration to the principle of walkability and its realisation in Saifi Village, Beirut.Anja Barbara Nelle proposes a concept of 'museality' as a characteristic of heritage town centres and exemplifies a 'musealisation' process through the presentation of three case studies in Spanish-colonial World heritage towns. She notes that musealisation is an urban transformation process that is not specifically addressed in urban planning or development. The author aims to promote an understanding of musealisation and proposes that this process should not remain as a passive practice which only arises due to historical past and special circumstances, but can be actively addressed and regulated through the planning procedures involving political and administrative establishments, as well as organised communities.In the concluding paper of this issue, Jose Javier Gomez Alvarez writes from Mexico on 'fragmentary industrial areas and urban renewal'. By addressing the issue of deindustrialisation and industrial conversion that has recently been common to many major cities in technologically advanced countries of Western Europe and North America (Ryan, 2008), the author attempts to illustrate an alternative view and understanding of this process for the medium income Latin American cities. Paradoxically, he finds that conditions of the transformation of fragmented and degraded industrial inner areas into urban public spaces 'often exist within the context', as existing configuration, location and potential of such industrial zone usually either strongly stimulate or completely hinder the renewal of the area. Research in the paper focuses on the industrial inner-city areas along the west section of the Railway Axis of Guadalajara and aims to find potential places, in which the 'public space' and 'the city' can be rescued from the increasingly dominant fragmentary urban environment.

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Original Article

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Evaluating new urbanism's walkability performance: A comprehensive approach to assessment in Saifi Village, Beirut, Lebanon

Khalid S Al-Hagla

Abstract

'Walkability' is one of the core aspects of New Urbanism. Evaluation of the factors that influence this marker requires further extension than just the physical boundaries of a New Urbanism development. This paper presents a comprehensive approach for assessing walkability based on a combination of its conceptual and applicable aspects. This approach works on two different, but compatible, scales: macro and micro. The former is concerned with evaluating the Urban Framework that is responsible for triggering walking behaviour, and indirectly influences walkability in a New Urbanism development area. The latter is concerned with evaluating the influence of different New Urbanism facets as either generating walking, or encouraging and supporting it within the New Urbanism development area itself. This paper uses this approach to evaluate the performance of various New Urbanism facets that influence 'walkability' in Saifi Village, which is a New Urbanism Development in downtown Beirut.

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Original Article

Evaluating new urbanism's walkability performance: A comprehensive approach to assessment in Saifi Village, Beirut, Lebanon

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Abstract 'Walkability' is one of the core aspects of New Urbanism. Evaluation of the factors that influence this marker requires further extension than just the physical boundaries of a New Urbanism development. This paper presents a comprehensive approach for assessing walkability based on a combination of its conceptual and applicable aspects. This approach works on two different, but compatible, scales: macro and micro. The former is concerned with evaluating the Urban Framework that is responsible for triggering walking behaviour, and indirectly influences walkability in a New Urbanism development area. The latter is concerned with evaluating the influence of different New Urbanism facets as either generating walking, or encouraging and supporting it within the New Urbanism development area itself. This paper uses this approach to evaluate the performance of various New Urbanism facets that influence 'walkability' in Saifi Village, which is a New Urbanism Development in downtown Beirut.
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Keywords: new urbanism; walkability; Beirut city centre redevelopment; Saifi village; Solidère

Introduction

According to Steuteville (2004), 'New urbanism is a reaction to sprawl. It is based on principles of planning and architecture that work together to create human-scale, walkable communities' (Carroll *et al*, 2007). This vision correlates with a number of urbanization concepts, such as Neo-traditional Urbanism and Transit-Oriented Development. Although these concepts share the same objective, namely to create a community that depends mainly on walking, New Urbanism is much more comprehensive in its scope; it is more detailed with regard to all the physical factors that configure the physical settings of daily life interactions.

The Charter for New Urbanism sets out a number of principles that together form a set of values that underpin the performance of a New Urbanism community. Walkability is one of the key principles to be addressed at the community level. The Congress for New Urbanism (2007) highlights that 'New Urbanism is one philosophy that is often followed in order to create a landscape that accommodates the pedestrian and makes walking more enjoyable because ''streets are safe, comfortable, interesting places for people to walk and meet''. As such, walking is closely linked to the New Urbanism community perspective, in that a walking-based community creates a way of life that supports many other stated New Urbanism values, and thus, the value of walkability is in continuous interaction with the other values.

Saifi Village is a residential compound in downtown Beirut. Its physical structure follows the Principles of New Urbanism development: it is based on neo-traditional Lebanese architectural and spatial treatments, and aspires to the principle of walkability as a predominant lifestyle.

Despite this, the walkability performance parameters in Saifi Village are less than expected based on the high quality of its physical features. This negatively affects the overall performance of this residential community as a New Urbanism development. This paper tackles this mismatch of aspiration and realization in Saifi Village, and looks at the under-performance of its physical setting in relation to walkability.

Urban Framework of Downtown Beirut

The reconstruction of downtown Beirut after the Civil War (1975–1990) is charged with much more than just physically re-building a destroyed setting. The renaissance of the downtown has acquired a symbolic significance, representing no less than the re-birth of Lebanon as a major focal point of businesses, services and tourism in the region (Economic and Social Commission for Western Asia, 2005). This vision has had a direct impact on the formulation of a new urban framework for the downtown area. Moreover, it frames the re-development of the downtown as a comprehensive development scheme, with special guidelines, codes and ordinances. This has led to the project being entrusted to a shareholding company, Solidère, under the direct guidance of the ex-Prime Minister Hariri (Fawaz and Peillen, 2003). Solidère's strategy was to stimulate high-quality real estate development in the city centre, and it thus built a number of state-of-the-art buildings and urban developments, including United Nations House, Saifi Village, the embassy compound and the Rue de France complex (Solidère, 2005).

Saifi Village is regarded as one of the leading residential re-development projects within Beirut's downtown area (Figure 1). It merges new design with the traditional Lebanese style, with existing buildings restored to their original state to contribute to a neo-traditional sense of place. The public realm design and landscaping convey an appealing and communal ambience of gardens, courts and walkways. The commercial success of the project led Solidère to initiate concepts for extensions of Saifi Village. A number of development lots were sold using New Urbanism concepts (Solidère, 2005).

The detailed application of 'walkability' in Saifi Village as an aspect of New Urbanism needed to extend beyond the scheme itself to influence the wider re-design of the urban spatial structure of

Figure 1: Location of Saifi Village in downtown Beirut.

downtown Beirut. The success of this strategy can be assessed by analyzing three main urban attributes of the downtown: 'urban form', 'urban interactions' and 'organizing principles' (after Bryce *et al*, 2005).

Urban form

The urban form of downtown Beirut is addressed by the spatial configuration of the fixed elements in the Solidère re-development plan. This includes the pattern of land use and its use density, as well as the spatial design of the transport and communication infrastructures. The re-development plan involves four types of development, with different characteristics, land use and spatial formulations for each type (Figures 2 and 3).

- The first type is a mixed-use development, with mainly retail shops and offices. This type is concentrated at the centre of the re-development area; it is the Beirut Central Business District known as the Foch-Allenby area. It has a coherent physical structure, with well-defined streets at 'El-Nejma' square 'Sahet el-Nejma'. Most of this area is dedicated to pedestrian use only, with fully articulated landscaping elements to promote this atmosphere.
- The second is the 'Biel' zone: a rehabilitation of the North Coast (Linord Project), planning and developing hundreds of hectares of reclaimed land over the sea (Fawaz and Peillen, 2003). This area is devoted to mega-structure developments. The ordinances applied to this zone allow the maximum building heights, resulting

Figure 2: Main constituents of downtown Beirut: (**1**) Biel, (**2**) Foch-Allenby, (**3**) Martyr's Square, (**4**) Saifi Village, (**5**) the edge of the Beirut re-development area.

in development of this area as a cluster of high-rise buildings with free spatial expression. Most of the remaining land is allocated to extremely luxurious residential developments ('Marina' zone).

- The third is Martyr's Square. This is a monumental public space located at the right side of the re-development area. It has great value both historically and nationally. This area dates back to medieval times and has growing importance as a witness to various events that have occurred in the city. These events each give the square its unique identity and highlight it as the main living-room of Beirut. The strong identity is intensified by the pureness of its form, based on a rectangular plan with firm expression of its spatial enclosures.
- The fourth area is Saifi Village. This is a residential community, located at the lower right corner of the re-development plan of downtown Beirut proposed by Solidère. The community was erected in two phases. The first is a cluster of five buildings with facades along the streets. These are organized in a traditional way around a garden courtyard with a restored three-floor flat building that dates to the 1940s in the centre (Solidère, 2005). The second phase is an extension of the first. Its spatial organization follows the linear organization that distinguishes downtown Beirut's radial planning.

Urban interactions

Urban interactions within downtown Beirut refer to the flow of goods, people, services and information between different locations within this area. These have direct influences on downtown walkability, related to the typology of urban form of downtown Beirut, as previously discussed. In examining this urban form, we can distinguish two scales of interactions:

- Macro-scale interactions, which are related to different types of interactions among the four main areas of downtown Beirut's urban form, and
- Micro-scale interactions, which are related to different types of interactions within the development areas of downtown Beirut.

Organizing principles

Organizing principles are the values upon which the re-development of downtown Beirut is formulated. These values are derived from the comprehensive vision of downtown re-development to create high-quality urban developments using diverse and mixed land uses. This is based on Solidère's vision of the role that downtown Beirut must play after the Civil War (1975–1990). It aims at creating mixed-use high-quality developments that are capable of attracting foreign investment in addition to tourists. This policy actually achieved its goals: in 2003, more than 1 million tourists visited Lebanon, the highest number in 24 years, and from January to July 2004, more than 730 000 foreigners visited Lebanon, up from the 527 000 visitors over the same period in 2003 (Economic and Social Commission for Western Asia, 2005). Despite the political instability in Lebanon since 2005, Solidère is continuing with its policy.

Saifi Village: New Urbanism Perspective

Saifi Village is a main part of the re-development plan of downtown Beirut. When applying the principles of New Urbanism's Charter (for example, traditional neighbourhood structure, quality architecture and urban design) to this residential community, there is a large degree of compatibility. This is reflected not only by different physical settings, but also by spatial

Figure 3: Urban framework of downtown Beirut.

articulation and landscaping elements (Figure 4). These are orchestrated to deepen the sense of community and to promote other values associated with New Urbanism (for example, connectivity, walkability, quality of life).

Defining open space

The two phases of neighbourhood construction clearly define the open-space structure. Two main types of open space are used: corridors and small nodes. However, the main focal open space is located at the heart of the neighbourhood as a community reference. The open spaces are organized in a hierarchy, starting from public/private space (building entrances) to much more public (pedestrian corridors and small nodes) to the most public space in the community (main plaza). There is a smooth transition between an intimate and an urban scale moving through the neighbourhood.

Figure 4: Saifi Village: Community main plaza.

The complete definition of open-space structure increases the feeling of intimacy and supports community social identification and coherence.

Architecture style

The neighbourhood, in its two phases, follows neo-traditional Lebanese architectural expression. Its architecture style is inspired by the Beirut architecture of the 1950s. A number of traditional Lebanese architectural elements are used: traditional Lebanese triple arcades, wooden window-frames, arabesques, old wrought iron, pillars, diverse decorations and red clay tiles (Solidère, 2005). The use of materials and pastel colours, ranging from reddish ochre and yellow to white and blue, reinforce the feeling of local identity.

Amenities and landscaping elements

The Saifi community obtains its 'urban village' character from the type of landscaping elements, and the way it uses these elements (Figure 5). The special treatments for landscaping elements help create a cheerful and distinctive outdoor environment. Different materials, colours and treatments have different uses: roads are paved with basalt, sidewalks with brick and pedestrian areas with cobblestones. Different street furnishings, such as street lighting, signage and bollards, are used to ensure a sense of traditional place (Solidère, 2001). In addition, a number of amenities are placed in open spaces to support outdoor vitality. These amenities vary according to their scale, location and role, including sports courts, marketplaces, parking facilities, children's playgrounds and seat benches.

Figure 5: Saifi Village: Walkability facilities.

Assessing Walkability

McMillan (2005) provides a conceptual framework for studying urban form, including a way to measure pedestrian accessibility. The conceptual framework clarifies the relationship between urban form and a child's trip to school. It asserts that urban form does not directly impact how a child gets to school, but rather that there is a set of mediating and moderating factors (Stevens, 2005). The mediating factors are neighbourhood and traffic safety, as well as available household transportation options (including distance from home to school and number of cars at home). Moderating factors include parental attitudes, social or cultural norms and socio-demographic characteristics (McMillan, 2005).

Moudon and Lee (2003) also provided a conceptual framework for measuring walkability. This is based on their study of a number of methods called environmental audit instruments: tools for inventorying and assessing environmental conditions that are associated with walking (Moudon and Lee, 2003). The framework focuses on characteristics of place, which include the origin, destination and area that a pedestrian walks within (Stevens, 2005). This idea of using the characteristics of where a person starts or ends his/her trip gets at the elements that control why urban form affects travel behaviour. This is similar to what McMillan proposed when she addressed mediating factors.

Approaches to measuring walkability

The Partnership for a Walkable America developed a one-page questionnaire with five easy-to-answer questions that produces a score from 5 to 30 points (Stevens, 2005). The questionnaire makes people aware of what makes a community pedestrian-friendly by asking the following questions: Did you have room to walk? Was it easy to cross streets? Were drivers well behaved? and Were safety rules easy to follow (PWAPBIC *et al*, 2005)? Each of these questions can be related to one of the walkability indicators used in this neighbourhood study, specifically sidewalk conditions, pedestrian crossing aids, safety of the area, and traffic control devices and signs.

A much more practical methodology for studying walkability was developed by Terri Pikora *et al*. Their research approach involved an observation-based tool: an environmental audit

instrument (Stevens, 2005). The audit instrument, created by Pikora *et al* (2003), is a systematic pedestrian and cycling environmental scan (SPACES) that uses checklists to collect data in the field. The SPACES tool is a comprehensive inventory of the characteristics of the roadway and elements surrounding it. Researchers working on developing this tool first categorized all the different environmental factors that could affect walking into four groups. These are functional (physical attributes of the street), safety (characteristics of a safe environment), aesthetic (elements such as trees or gardens) and destination (relationship of neighbourhood services to residences). To assign weights to different walkability indicators, interviews and panel discussions with local experts were held to reach a consensus on the factors that most affect whether people walk or not. Factors concerning personal safety, aesthetics and having a destination to travel to were determined to be the most important elements (Pikora *et al*, 2003). This methodology developed a point-scoring system for assessing walkability performance (Stevens, 2005), as shown in Table 1.

The performance of these indicators is closely related to how well New Urbanism's aspects are applied to communities. These aspects are classified as either 'walkability generators' or 'walkability catalysts'. The first category consists of New Urbanism aspects that are responsible for generating 'walking need', including mixed-use buildings and diversity, mixed housing and increased density. The second category plays a different role. It is responsible for configuring the setting in a way that supports 'walkability', and includes connectivity, quality of architecture and urban design, smart transportation, sustainability and quality of life. Traditional neighbourhood structure plays a dual role as a walkability generator and catalyst (Table 2).

Assessing Walkability in Saifi Village

The assessment of 'walkability' in Saifi Village incorporates two compatible steps. The first is to evaluate the performance of walkability generators and the second is to evaluate walkability

Table 1: Walkability indicators (point scoring system)

1. Attractive for walking		*7. Land uses*		*14. Traffic control devices*	
Strongly agree	8	1 point per use	—	1 point per device present	—
Agree	6				
Neutral	4	*8. Number of traffic lanes*		*15. Transit stops*	
Disagree	2	1 or 2	2	Yes	1
Strongly disagree	0	More than 2	1	No	0
2. Safe for walking		*9. Buffers present?*		*16. Walk through parking lots*	
Strongly agree	8	1 point per buffer	—	Yes	0
Agree	6			No	1
Neutral	4	*10. Speed limit*			
Disagree	2	less than 20 mph	2	*17. Crossing aids*	
Strongly disagree	0	20–30 mph	1	1 point per aid present	—
		Greater than 30 mph	0		
3. Traffic volume				*18. Lighting*	
High	1	*11. Building setbacks?*		Fewer than 3 sources	0
Low	0	Less than 10 feet	2	3–6 sources	1
		10–20 feet	1	Greater than 6 sources	2
4. Sidewalk condition		Greater than 20 feet	0		
Excellent	8			*19. Number of street trees*	
Good	6	*12. Path setbacks?*		Fewer than 5 trees	0
Average	4	Less than 1 feet	0	5–10 trees	1
Fair	2	1–3 feet	1	Greater than 10 trees	2
Poor	0	3–10 feet	2		
		Greater than 10 feet	3	*20. Driveways*	
5. Segment continues?	1			Fewer than 5 driveways	2
		13. On street parking?		5–10 driveways	1
6. Sidewalk complete	4	Both sides	2		
		One side 1 none	0		

Based on Stevens (2005).

Table 2: Walkability matrix (correlation between different New Urbanism aspects (Walkability generators and catalysts) and walkability indicators)

New urbanism aspects	*Walkability indicators*																			
	Attractive for walking	*Safe for walking*	*Traffic volume*	*Sidewalk condition*	*Segment continues?*	*Sidewalk complete*	*Land uses*	*Number of traffic lanes*	*Buffers present?*	*Speed limit*	*Building setbacks?*	*Path setbacks?*	*On street parking?*	*Traffic control devices*	*Transit stops*	*Walk through parking lots*	*Crossing aids*	*Lighting*	*Number of street trees*	*Driveways*
(a) Walkability generators																				
Mixed-use and diversity	■	■	■	—	—	—	■	—	—	—	—	—	—	—	■	—	—	■	—	■
Mixed housing	—	■	—	—	—	—	■	—	—	—	—	—	—	—	■	—	—	—	—	■
Increased density	—	■	■	—	—	—	■	—	■	—	■	—	■	■	■	—	—	■	—	■
(a)/(b)																				
Traditional neighbourhood structure	■	—	■	■	—	■	■	■	■	■	■	■	■	■	—	—	■	—	—	—
(b) Walkability catalysts																				
Connectivity	■	■	—	—	■	■	■	—	—	—	—	—	—	—	■	—	—	—	—	■
Quality architecture and urban design	■	—	—	■	■	■	■	—	■	—	■	■	—	—	—	—	■	■	■	—
Smart transportation	—	—	■	—	—	—	—	■	—	■	—	—	■	■	■	—	■	—	—	■
Sustainability	—	—	■	—	—	—	■	—	—	—	—	—	—	—	■	—	—	—	■	—
Quality of life	■	■	—	■	—	■	—	■	■	—	—	—	—	—	■	—	■	■	■	—

catalysts. However, downtown Beirut's re-development plan, manipulated as one entity under the comprehensive vision of Solidère, and its correlated interwoven urban framework, requires that this evaluation be applied at two different scales: macro and micro.

The performance of walkability generators

Walkability generators are related to 'mixed-use', 'diversity' and 'density', urban values applied at a macro scale to downtown Beirut, and at micro scale to Saifi Village (Figure 6). The influence of these values varies according to their scale of application.

The urban framework discussed earlier shows that mixed-use and diversity are among the main features that distinguish the urban development pattern of downtown Beirut. Solidère's target is to sustain downtown livability and richness based on complex and diverse land uses and a mixture of different development patterns. However, the urban form of downtown Beirut and its related land uses shows a contradiction in achieving this at both the macro and micro scales. The diversity and mixture of land uses is achieved at a macro scale among all the main constituencies of the downtown, but this value is achieved less within a single development area. This has considerable effects on a number of associated values, such as walkability.

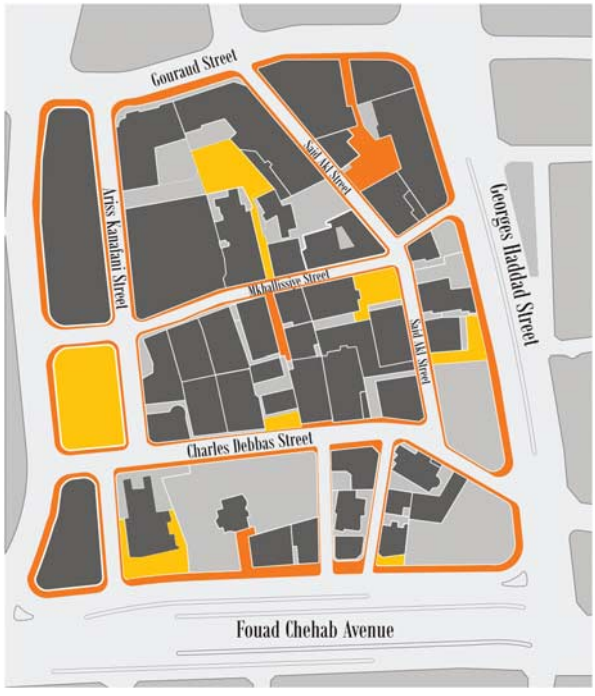

Figure 6: Saifi Village: Spatial structure.

The Saifi community was originally designed to serve two main functions and their related amenities. Housing is the predominant function all over the village, and the community amenities are mainly used for this function. However, a number of galleries and art shops are distributed along pedestrian streets in what is called the Artists' Quarter. The scale of the commercial activities is neither large nor effective enough to create a complex community. This limited mixture of uses and amenities, and the narrow range of diversity, do not generate walking behaviour within the community. On the other hand, certain frequent events (for example, weekly open market) and festivals are able to attract a number of external visitors, affecting the walkability of the community at these times.

Based on New Urbanism principles, the community was designed as a residence for a range of middle-income people. Once the project's first stage was accomplished, the target residents of the project changed. It has become a fashionable housing community, and the unit price has doubled. This drastically changed the projects' target residents in its second stage. The community has become high-income and filled with luxury housing. This monotype residence community negatively affects community diversity, and, consequently, walking behaviour. This type of community structure influences one of the major New Urbanism perspectives in the Saifi Village community.

The change of target residents has also caused population densities to decrease. Many owners are using their houses in Saifi Village as summer residences, especially those who live abroad, including Arabs from the Gulf area. This decreases the population density, and consequently reduces the opportunity to create the complexity needed to generate walking behaviour.

The performance of walkability catalysts

The performance of walkability catalysts is related to the urban values of 'connectivity' and 'high-quality architecture and urban developments'.

Macro-scale connectivity is related to interactions among the four main constituents of the Beirut downtown urban form: Beirut Central

Figure 7: Saifi Village: Connectivity constraints of downtown Beirut.

Business District (CBD), Biel, Martyr's Square and Saifi Village (Figure 7). These interactions are supported by a network of roads that link these adjacent urban features. The accessibility performance of this network is positive in linking all of the three physically structured developments (Beirut CBD, Biel and Saifi Village); its existing performance is negatively affected by the linkage between Martyr's Square as a spatial development area and the rest of the downtown elements. The volume of traffic passing through the main roads surrounding and cutting the Square weakens its role as a linkage feature at the heart of the downtown area. On the other hand, Saifi Village stands as a separate development parcel apart from other downtown development areas. These areas are on opposite sides of Martyr's Square, which physically affects the overall coherence of urban interactions among different downtown developments. Moreover, the volume of traffic and the width of streets encompassing Martyr's Square deepen this sense of isolation.

Micro-scale connectivity is concerned with interactions within the development areas of downtown Beirut. These differ according to the type of development. Both Beirut CBD and Saifi Village are based on neo-traditional patterns of development, which appreciate pedestrian movement as the major generator of interactions. This concept is directly reflected in aspects of spatial articulation, form constitution and types of land use in these areas. This is clear in the human scale pedestrian streets, the high quality of architectural details and the street furniture. On the other hand, car-oriented development dominates the 'Biel' zone, dictating different types of internal interactions, whereas the interactions within Martyr's Square are influenced by the role it plays in the community. This is a place for expressing opinions and sharing political and social points of view, which influences the types and frequencies of the square's internal interactions, especially on sit-in days. Then, mass-scaled interactions prohibit vehicles from passing through the square, and it becomes an arena exclusively for pedestrian interactions.

Solidère's policy (to improve the quality of downtown developments by initiating leading projects with recognized urban quality) has a positive influence on the overall quality of architectural and urban developments in the Beirut city centre. These projects include signal buildings, such as the United Nations House; retail and office headquarters; street cafés, such as the Foch-Allenby area (the district of Beirut Central District (BCD) that was built during the French mandate in the late 1920s and early 1930s); and residential developments such as Saifi Village. These models of development range from either an appropriation of tradition or intensified modernism (Economic and Social Commission for Western Asia, 2005). Within the context of the former, tradition is represented by blunt historical reference, red-tiled roofs and canopies, and arches of various proportions and sources. Modernism, on the other hand, is reduced to high-tech structures associated with glass boxes that are totally inappropriate to the local climate. The former is mainly represented in the pedestrian-oriented areas (Foch-Allenby area and the Saifi Village New Urbanism development), whereas the latter is mainly spread along the reclaimed land at 'Biel' (Marina zone). Other approaches have emerged to counter these superficial architectural statements. They display an influential character that could be called situated modernism (Economic and Social Commission for Western Asia, 2005). These include such buildings as the Banque Audi headquarters in BCD.

We use a matrix (Table 3) to show a non-numerical assessment of the 'Walkability' performance in Saifi Village. The matrix correlates aspects that shape the New Urbanism perspective in the community to walkability indicators. It highlights the influence of different aspects in one of three ways: positive, negative or neutral influence. The matrix makes it easy to study each walkability indicator individually. This can be used to determine the influences of the

Table 3: Walkability assessment matrix applied to Saifi Village community ([✔] positive influence, [×] negative influence and [■] neutral influence)

New urbanism aspects	*Walkability indicators*																			
	Attractive for walking	*Safe for walking*	*Traffic volume*	*Sidewalk condition*	*Segment continues?*	*Sidewalk complete*	*Land uses*	*Number of traffic lanes*	*Buffers present?*	*Speed limit*	*Building setbacks?*	*Path setbacks?*	*On street parking?*	*Traffic control devices*	*Transit stops*	*Walk through parking lots*	*Crossing aids*	*Lighting*	*Number of street trees*	*Driveways*
(a) Walkability generators																				
Mixed-use and diversity																				
Macro scale	✔	✔	×	—	—	—	✔	—	—	—	—	—	—	—	—	—	—	✔	—	✔
Micro scale	×	×	—	—	—	—	×	—	—	—	—	—	—	—	■	—	—	×	—	✔
Mixed housing	—	×	—	—	—	—	×	—	—	—	—	—	—	—	■	—	—	—	—	✔
Increased density	—	×	×	—	—	—	×	—	✔	—	✔	—	×	×	■	—	—	×	—	✔
(a)/(b)																				
Traditional neighbourhood structure	✔	—	×	✔	—	✔	×	✔	✔	✔	✔	✔	×	■	—	—	✔	—	—	—
(b) Walkability catalysts																				
Connectivity																				
Macro scale	×	×	—	—	×	×	✔	—	—	—	—	—	—	—	—	—	✔	—	—	×
Micro scale	✔	✔	—	—	✔	✔	×	—	—	—	—	—	—	—	■	—	✔	—	—	■
Quality architecture and urban design	✔	—	—	✔	✔	✔	✔	—	✔	—	✔	✔	—	—	—	—	✔	✔	✔	—
Smart transportation	—	—	✔	—	—	—	—	✔	—	✔	—	—	×	■	■	—	✔	—	—	✔
Sustainability	—	—	✔	—	—	—	×	—	—	—	—	—	—	—	■	—	—	—	✔	—
Quality of life	✔	✔	—	✔	—	✔	—	✔	✔	—	—	—	—	—	■	—	✔	✔	✔	—

community's New Urbanism perspective on a certain walkability indicator.

- *Reading the matrix vertically* shows that 'Land Use', as a walkability indicator, is the most negatively configured aspect in the Saifi community. Moreover, 'Transit Stops' are not influenced by any of the New Urbanism features.
- *Reading the matrix horizontally* shows that 'Quality Architecture & URBAN DESIGN' has the most positive influence on all the walkability indicators. However, all aspects that work as 'Walkability Generators' (mixed-use and diversity, mixed housing and increased density) have the most negative influence.

The influences of 'Mixed-Use and Diversity' and 'Connectivity' vary considerably according to their scale of application. The macro-scale application of 'Mixed-Use and Diversity' to downtown Beirut as a walkability generator has a positive impact, whereas its micro application to 'Saifi Village' has a negative impact. Meanwhile, the micro-scale application of 'Connectivity' to downtown Beirut as a walkability catalyst has a negative impact, and its application to 'Saifi Village' has a proven positive influence.

We use the walkability indicators' point-scoring system to evaluate walkability performance in Saifi Village. We follow this micro-scale application for all the aspects that formulate New Urbanism's perspective of Saifi Village, and apply this score system to two internal streets in Saifi Village: Mkhallissiye (Figure 8) and Said Akl (Figure 9). This numerical evaluation is an integral part of the non-numerical matrix shown in Table 3.

The score system assessment applied to New Urbanism's features in Saifi Village supports the previously described micro-scale evaluation of both walkability generators and catalysts. It shows the negative influence of 'Walkability Generators', and the positive influence of 'Walkability Catalysts' in the Saifi Village community.

Conclusions

We develop a Walkability assessment methodology based on an understanding of the conceptual interchangeable influences among all of the New Urbanism community features. We classify these features into two main groups. The first is responsible for generating walking behaviour,

Mkhallissiye Street

	Walkability Indicators	P
1.	Attractive for Walking	4
2.	Safe for Walking	4
3.	Traffic Volume	0
4.	Sidewalk Condition	8
5.	Segment Continues?	1
6.	Sidewalk Complete	4
7.	Land Uses	2
8.	Number of Traffic Lanes	2
9.	Buffers Present?	1
10.	Speed Limit	1
11.	Building Setbacks?	2
12.	Path Setbacks?	2
13.	On Street Parking?	0
14.	Traffic Control Devices	3
15.	Transit Stops	0
16.	Walk Through Parking Lots	1
17.	Crossing Aids	2
18.	Lighting	2
19.	Number of Street Trees	1
20.	Driveways	2
	Total Points	**41**

Figure 8: Walkability aspects of Mkhallissiye Street, Saifi Village.

Said Akl Street

	Walkability Indicators	P
1.	Attractive for Walking	6
2.	Safe for Walking	6
3.	Traffic Volume	0
4.	Sidewalk Condition	8
5.	Segment Continues?	1
6.	Sidewalk Complete	3
7.	Land Uses	2
8.	Number of Traffic Lanes	2
9.	Buffers Present?	1
10.	Speed Limit	1
11.	Building Setbacks?	2
12.	Path Setbacks?	1
13.	On Street Parking?	0
14.	Traffic Control Devices	2
15.	Transit Stops	0
16.	Walk Through Parking Lots	1
17.	Crossing Aids	3
18.	Lighting	1
19.	Number of Street Trees	1
20.	Driveways	2
	Total Points	**44**

Figure 9: Walkability aspects of Said Akl Street, Saifi Village.

whereas the second acts to support and catalyse this activity. The assessment method incorporates two steps: a non-numerical assessment matrix that correlates the community's New Urbanism features to a list of walkability indicators, and a numerical assessment of walkability indicators in specific urban spots.

We use this assessment methodology to evaluate the 'Walkability' performance of Saifi Village, a New Urbanism community in downtown Beirut. The assessment is based on understanding the urban framework within which the Saifi community is formulated. This adds a new dimension to the scope of evaluation. We discuss two scales of evaluation within which we address walkability generators and catalysts. The macro-scale evaluation is concerned with the configurations of downtown Beirut's urban areas, whereas the micro-scale evaluation is related to urban features that shape the Saifi community itself.

The urban framework of downtown Beirut shows that, while 'mixed-use and diversity' urban values have positive effects at the macro-scale and play a vital role as walkability generators, the 'connectivity' between different urban constituents of downtown Beirut's development has a negative effect and performs poorly as a walkability catalyst at this scale.

The micro-scale evaluation concludes that the walkability generators' performance, while directly related to 'mixed-use and diversity, mixed housing and increased density', has a profound negative effect on overall walkability performance compared with walkability catalysts performance, which is directly related to connectivity, quality of architecture and urban design, smart transportation, sustainability, quality of life and traditional neighbourhood structure. The numerical assessment used to evaluate the performance of 'walkability catalysts' on two main streets (Said Akl and Mkhallissiye) in Saifi Village is an integral part of the evaluation process, and supports the validity of this conclusion.

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