WHEN GOOD DESIGN INTENTIONS DO NOT MEET USERS EXPECTATIONS: EXPLORING QATAR UNIVERSITY CAMPUS OUTDOOR SPACES

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Abstract

Investigating the description of the Architect of Qatar University Campus reveals that one of the initial intentions in the design of the campus was to introduce a series of open public spaces and partially covered courtyards, displaying gardens and fountains to create small oases throughout the university. These spaces intended to encourage intellectual and social atmosphere and to provide agreeable surroundings for informal gathering and activities. However, preliminary observations of these spaces show that the original purpose for which they were created seems to be un-satisfied. Strikingly, no attempt has been made to systematically evaluate the performance of these spaces with respect to the use of the university community. Thus, this paper engulfs the issue of design intention versus users' reactions by conducting a post occupancy evaluation study. It introduces an assessment of the performance of Qatar University-QU campus outdoor spaces from users' perspective after it has been used and occupied for over 20 years. The assessment aims at understanding the mutual interaction process between the built environment exemplified by the physical characteristics of campus outdoor spaces and the needs of the university community exemplified by students, faculty, and staff. Therefore, the paper argues for the value of evaluating current campus outdoor spaces from users' perspective. It aims at defining problematic areas related to the utilization of current spaces—that are contrasted with the architect's design philosophy and intentions—in order to develop a framework for possible future improvements. The methodology adopted is multi-layered in nature and incorporates a wide variety of assessment techniques, including walk-through evaluation, observation, behavioral mapping, and questionnaires. The investigation reveals a number of problems that may hinder the performance of different types of QU campus users. The paper concludes that by recognizing how well university campus outdoor spaces respond to the needs of faculty, students, and staff, one can recommend ways of improving the outdoor environment necessary to facilitate the work and learning experiences of different users within the campus and the desired student-faculty interaction.

Keywords:

Outdoor spaces; campus planning; assessment; design intentions; users.

Introduction: When Good Design Intentions Do Not Meet Users' Expectations

To explain their work to others, architects typically develop statements that clarify their design philosophy, intentions, and the imperatives by which they pursued their design tasks. In many

cases however, these statements fail to reflect or address a major component—that is people or users. They are basically written—and the project is still on paper—to highlight the merits of the design while illustrating the skills of the designer or the design team as manifested in the final articulation of the building(s), the built form. In generic terms, architects in these statements emphasize their complete awareness of cultural, environmental, and perhaps economic constraints, but users are always in the shadow, and are simply taking a back seat. If they are addressed, the norm is that they are mentioned in a superficial manner. As this argument may be seen by some architects and designers as arbitrary or too general, I reflect here on Qatar University Campus in terms of what were the design philosophy and intentions as stated by its architect and how users comprehend it, see it, and actually use it.

With the participation of UNESCO a preliminary study was launched in the early seventies to explore the establishment and creation of a higher education system and supporting facilities for the state of Qatar. It resulted in a core project representing the first phase of the academic buildings in the now completed Qatar University campus. The late Kamal El-Kafrawi, the then Paris based Egyptian architect was the prime design architect of the master plan and all campus buildings. Ove Arups and Partners were the consultants undertaking structural, infrastructural and engineering services. Inaugurated in 1985 with less than 1000 students, the students' population in 2008 reached a little less than 10,000.

Since its inauguration, the project has received considerable coverage in both printed and online media and was described and analyzed in international and regional publications. Strikingly, most publications portrayed the project in a manner that goes along with what the architect has actually mentioned in his statement about the campus planning. They all articulate the project in a praising realm while illustrating various successful design aspects. This is clearly evident in the writings of Brice Taylor (1984) and those of Kultermann (1984; 1999; and 2002). As well, an assessment study of the campus by Romi Khosla (1992) praise the project utilizing the statement and philosophy El-Kafrawi has outlined. Now, the question would be, where the users are, do they have something to say about the project,? Have the design intentions mentioned in the architect's statement met users' expectations? These questions are in essence the core of my argument. It is my firm belief that these writings contribute to superficial judgments about the project while placing high value on the formal aesthetics of the campus, but discussing its occupants and how they use it is oversimplified.

On the contrary, Post Occupancy Evaluation-POE- studies have proven tremendously successful to the clients and owners of various building types (Preiser & Nasar, 2008). At the international level, many studies have addressed the problems associated with educational facilities (Lackney, 1994; Sanoff, 1994 & 2003, Nasar, Preiser and Fisher, 2007). However, very little is known about the performance of university campuses and in particular the performance of outdoor spaces within. At the regional level, three notable studies were conducted by Mahgoub (1998), Abu-Ghazzeh (1999), and Gabr (2002), they all addressed issues that pertain to the quality of educational

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and support spaces but with little attention to outdoor spaces. In all cases, these POE studies offer likely objective results that continuously indicate the need to fully understand users' comprehension, perspective, behavior, and perception of the learning environment and the associated physical spaces.

Thus, this paper engulfs the issue of design intention versus users' expectations by conducting a POE study. The paper introduces an assessment of the performance of Qatar University-QU campus outdoor spaces from users' perspective after it has been used and occupied for over 20 years. The assessment aims at understanding the mutual interaction process between the built environment exemplified by the physical characteristics of campus outdoor spaces and the needs of the university community exemplified by students, faculty, and staff. Therefore, the paper argues for the value of evaluating current campus outdoor spaces from users' perspective. It aims at defining problematic areas related to the utilization of current spaces—that are contrasted with the architect's design philosophy and intentions—in order to develop a framework for possible future improvements. The methodology adopted is multi-layered in nature and incorporates a wide variety of assessment techniques, including walk-through evaluation, observation, behavioral mapping, and questionnaires. The investigation reveals a number of problems that may hinder the performance of different types of QU campus users. The paper concludes that by recognizing how well university campus outdoor spaces respond to the needs of faculty, students, and staff, one can recommend ways of improving the outdoor environment necessary to facilitate the work and learning experiences of different users within the campus and the desired student-faculty interaction.

University Campus Outdoor Spaces: A Literature Account

In their classical work titled People Places: Design Guidelines for Urban Open Space, Marcus and Francis (1998) argue that "a search for the published literature on how campus open spaces are used (or indeed how campus buildings are used) proved to be a thankless task." Their criticism lies in the fact that at the time many books on campus planning and building were written, designers apparently felt that innovative buildings must be approached via monumental sets of stairs or across vast, empty plazas. However, there was little recognition of the need for pleasing, casual gathering places at building all-important, but the eye-level, day-to-day experience of passing through and using the spaces between buildings was seemingly of little consequence (Marcus and Francis, 1998). Therefore, it is argued that the literature on campus planning (as opposed to individual building design) is somewhat richer in number of volumes and intellectual content. Several books, case studies, and conference proceedings appeared in the 1960s, paralleling the increase in college enrollment and campus construction. But there is little in these texts to aid the designer of campus open spaces. Not unexpectedly, their focus is on fiscal issues, educational policy, and large-scale planning (Marcus and Francis, 1998).

In many of the books on campus planning, the approach is to discuss buildings rather than outdoor areas for gathering (Crookstone,

1975; Dober, 1992 & 2000; Patterson, 1966; Schmertz, 1972). The approach is nevertheless architectural, focusing on outdoor spaces as form-giving elements appraised for their historic symbolism and aesthetic qualities, with minimal reference to how these spaces might be perceived, valued, and used by actual human beings who make up the population of a campus environment.

The lack of concern for outdoor spaces in the literature on campus design is regrettable. For most campus users, the campus landscape is critical in providing an imageable milieu for campus life. Compare, for example, the hard, concrete, urban image of Laney College in Oakland, California, to the rural, tree-studded expanse of the University of California's Santa Cruz campus (Fisher and Nasar, 1992 a & b.). The contrast is not so much one of building design but the size, design, and detailing of the spaces between buildings (Nasar, Presier, and Fisher, 2007). It should be noted that some of the deficiencies in the literature on campus outdoor space use are beginning to be filled by studies written by students and faculty at schools where post-occupancy evaluation is part of the curriculum (Sanoff, 2003).

The preceding critical analysis of the literature fosters the premises upon which this research is based. While it outlines the need for and the value of Post Occupancy Evaluation Studies, it signals the lack of studies and interest in campus outdoor spaces. As well, it sheds light on the issue of how it looks versus how it works, an issue that continued to be ignored in architectural and design practices of campus facilities for several decades.

Qatar University Campus:
Design Features, Architect's Statements, and Preliminary Observations

A brief analysis of the project (on paper) reveals the core concepts and the design intentions of the architect. Academic buildings are planned within a ring road with sports and ancillary facilities to the outside (Figure 1 a. & B.). The concept for high quality concrete buildings in a modular low-rise has allowed the use of repetitive pre-cast elements for both clad and structural walls. The layout of academic buildings is based on grid forms, an octagon 8 4 m in width and a square with sides of 3 5 m. The octagons are adjacent and connected with squares to form the modular pattern. Each octagonal classroom module is linked to at least two "lobbies". One lobby can be used either as an entrance and a transition space between classrooms or an additional but secluded classroom space, the second lobby as a source of natural light and a meeting place (Figures, 2, 3).

Figure 1.a: The Master Planning Concept of Qatar University Campus: Enclosing Academic Buildings in a Ring Road. (Source: Archnet).

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Figure 1.b: Aerial View of Qatar University Campus: Early Stages of Implementation. (Source: Archnet).

Figure 2: The Use of Repetitive Pre-cast Elements for Both Cladding and Structural Walls, A Major Design Feature that Characterizes the Design of All Educational Buildings. (Source: Author).
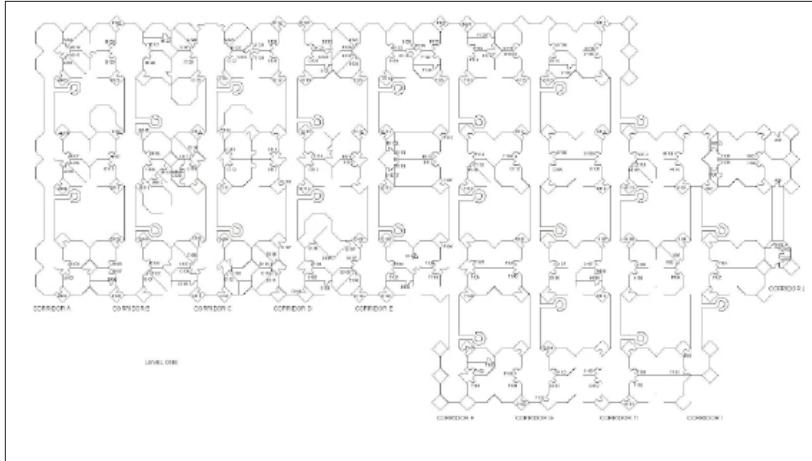
Figure 3: Diagrammatic Plan of Modular Pattern Utilized in the Design of the Academic Buildings. (Source: Qatar University Facility Management Department).

The octagonal units are surmounted by wind-tower structures to provide cool air and reduce humidity. Towers of light are also introduced and are intended to control the harsh sunlight, and abundant use of mashrabiyas and some stained glass also serve to mediate the environment. Open and partially covered courtyards, planted and often with fountains, are plentiful throughout the site. The architect put strong emphasis on natural ventilation, one of the many links in which he relates to traditional architecture of the region. As specific models he used the few still existing wind-tower houses in Doha and modernized the basic principles (Figures 4 & 5).

By investigating some of El-Kafrawi's statements one can confirm that they correspond to the description of the project (on paper) (El Kafrawi, 1992: http://archnet.org/library/files/one-file. jsp?file_id=708). He states that:

The octagonal room plan has been employed for several reasons. A convenient support for the square wind towers and towers of light, the octagonal form also minimizes heat absorption by shortening the period of time the sun shines on any given side.

Not only are the Tower of Winds a substitute for mechanical ventilation and air conditioning in case of power failure, but they also characterize the outline of the University buildings and relate to the cultural environment.

Architecture is a tangible expression of a civilization, the product of the intellectual, social, economic and political activity of a whole people; construction technology is simply the tool with which to give form to this expression. One has therefore closely to analyze the environment of villages, towns and cities in the Arab world, to determine the effects of Western contemporary Architecture. Since the technology has been applied without the philosophy which underlies it, the modern buildings are foreign to the area, which shows how far Arab architecture has lost direction, and the profound effect this has in the individual and his environment. One has to

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reconcile the immediate need for the import of modern technology with the needs also to adapt it for use in the local environment. This implies considerable study of the needs and aspirations of the individual.

As philosophical principle in the design of the university, I posed this problem of the conflict between local culture and imported technology to experts in various disciplines. I would suggest that education in the effects of the conflict should be a principal aim of the new University of the State of Qatar.

I am to extend the way in which traditional values and lives are expressed architecturally, so as to strengthen the psychological link with the Qatar character, and ensure a sense of continuity in the modern environment.

Figure 4.a: Utilization of Wind Towers in Main Administration Building of Qatar University. (Source: Author).

Figure 4.b: Emphasizing Natural Ventilation by Using Wind-Towers in the Education Technology Center. (Source: Author).

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Figure 5: Views of Different Outdoor Spaces: Open and Partially Covered Courtyards within the Educational Buildings. (Source: Author).

What do these statements tell us? They basically convey that El-Kafrawi had a number of good intentions in terms of trying to react to climatic conditions, mandates of architectural expressions while attempting to address the dialectic relationship between modern technology and local character. However, while the human component (users/ people) is relatively visible in these statements, it appears that it is superficially addressed. In essence, users' expectations have not been met, especially when relating these statements to current reality; one can confidently indicate that there is a dramatic gap between the two. Simple observation suggests that a number of shortcomings exist. The site is confusing where many faculty and students have difficulty reaching their destinations although some have been on campus for several years; classrooms are entirely dark and rely completely on artificial lighting; wooden mashrabiya windows are affected by the weather condition and the ferocious sun rays and now cannot be opened— despite the continuous maintenance; the air conditioning system is used almost throughout the year because wind towers are not utilized any more. This was based on a decision of the university administration to close them all due to the amount of dust entering all the spaces through them. The list of shortcomings is endless and obviously good design intentions were not enough.

In the context of exploring the campus of Qatar University, I focus on the outdoor spaces. These spaces were intended to encourage intellectual and social atmosphere and to provide agreeable surroundings for informal gathering and activities. However, preliminary observations of these spaces show that the original purpose for which they were created seems to be un-satisfied. Strikingly, no attempt has been made to systematically evaluate their performance with respect to the use of the university community. On this basis, the current assessment study is undertaken to objectively some reliable results on how campus users perceive, comprehend, and actually use these outdoor spaces.

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A Multilayered Methodology for Investigating Qatar University Campus Outdoor Spaces

A multilayered methodology is utilized in this research to develop reliable results. It includes direct impressionistic observation, walkthrough evaluation, survey questionnaire, and behavioral mapping studies of key spaces. It is recognized that there is a high value of utilizing a comprehensive multi-layered methodology with multiple feedback mechanisms. Such a value can be exemplified by the avoidance of any shortcomings of using a singular method and thereby reaching more reliable results.

Direct Impressionistic Observation

Direct observation is undertaken for two reasons; the first is to identify key issues to be explored by using other methods and tools, while the second is to verify the responses received. Direct observation in this research involved touring the outdoor spaces several times within the older part of the campus while documenting the tour by photographing key spaces, key positive aspects, and demerits found in the spaces. This is conducted as perception of failures and successes of various aspects changes based on familiarity and in-depth understanding of those aspects. While this step is conducted as prelude for the implementation of other procedures, it is presented at the end of the analysis and discussion for verification purposes. It is noted that this procedure would result in a series of photographs named "Image Dialogue" where the most important issues are highlighted.

Walkthrough Evaluation

A total number of 24 aspects are identified and categorized under three sets of issues that are believed to have direct relation with the quality of the outdoor spaces. They included contextual and massing, interface and visual appearance, and way-finding aspects. Each category includes a number of questions/checklists that are scored in terms of their degree of appropriateness using a five point scale, where (1) represents the lowest degree of appropriateness (highly inappropriate), and (5) represents the highest degree of appropriateness (highly appropriate). Notably, some of the underlying issues of a category of checklists overlap with issues under another category. For example, some aspects underlying the visual appearance may overlap with similar aspects underlying massing. Also, some aspects underlying contextual aspects may overlap with similar aspects underlying way-finding. The definition of each category is outlined as follows:

• Contextual and Massing Aspects

Buildings are usually located in a context. The context is exemplified by several visual attributes such as character, size, visual features, materials, and relationship of one or groups of buildings building to the surrounding physical environment. The context is simply the building's setting. On the other hand, buildings are typically organized in form into some type of massing. Massing of the parts always gives the building's form a meaning and variety while meeting users needs.

• Interface and Visual Appearance Aspects

A building is essentially an enclosure that separates an interior private space from the exterior public space. The interface is the crucial meeting place where the inside of the building connects with the outside (Sanoff, 1991). Visual aspects include issues that pertain to the relationship between

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the function of the building and the expression of those functions as they look from outside and as perceived by the users.

• *Way-finding Aspects*

Way-finding is the ability for people to discern routes, traffic patterns or passageways in and around the building. It is the ability of people to know their whereabouts in and around the building. Sign design, signage system, and environmental graphics are important aspects that contribute to a successful way-finding mechanism. In this respect, legibility is a concept that is introduced here which questions whether the environment is legible, easy to read; that is appropriate for directing people to their destinations.

The walkthrough evaluation checklist was given to 64 students to rate the issues according to their experience of the campus. However, they were requested to concentrate only on the outdoor spaces within educational buildings in the old campus area, as well as the walkways and spaces connecting the educational buildings with other support buildings. These included the colleges of Art and Sciences, Education, and Engineering. Participating students were randomly selected, but the majority of participants were enrolled in classes I have taught during the fall and spring semesters of the academic year 2006-2007. The total number of responses received was from 58 students. It should be noted that I as a researcher and user have conducted this evaluation procedure in an attempt to relate to and to verify the ratings students have made.

Survey Questionnaire

A survey questionnaire was devised to assess the qualities of the outdoor spaces throughout the campus. The survey included attitudinal scales as well as selection from options. The questionnaire involves issues that pertain to the overall design quality; best outdoor spaces as perceived by the students; best design features available in those spaces; signs and signage systems; lights and lighting systems; seating arrangements; shading devices and safety. As part of the assignments of the class of Engineering Skills and Ethics of Spring 2007, students were required to distribute and collect the questionnaires among their colleagues of the college of engineering and of other colleges. Therefore, a considerable number of responses were received from students. However, another round of questionnaire distribution was undertaken early in the Fall semester of 2007. The total number of valid responses to the questionnaire received was from 123 students.

Behavioral Mapping

Behavioral mapping is a systematic way of recording peoples' locations, such as where they sit, stand, or where they spend their time. In this research a combined unobtrusive mapping technique is used which integrates "place-centered" mapping and "individual-centered" mapping. Place centered mapping aims at observing actions in a particular setting which are recorded on plans or diagrams. Individual centered mapping aims at recording the tasks, activities, and movements of people throughout the space. It represents a systematic learning about a particular group of individuals whose activities are distributed throughout a specific period of time.

Four key outdoor spaces within Qatar University campus were selected purposively as shown in Figure (6). Spaces 1 and 2 are associated with

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the Dean of Engineering and the Associate Deans' offices together with their secretaries. The assumption is that there will be an intensity of movement and use in these spaces where faculty, students, and staff communicate regularly with these offices. Space 3 was selected based on its location in close proximity to the faculty parking and at the same time leading to Engineering admin offices. Space 4 was selected as a representative space along the central pedestrian spine within the academic buildings.

Since the purpose is to investigate the usability of the outdoor spaces, each of the four spaces was observed 6 times with an overlapping period including the beginning and ending of classes and the break time in-between. It is noted that the observation of each space is carried out over a period of two days within the week as breaks between classes differ.

Major Findings and Discussion

This section is structured under four headings that include the results of the walkthrough evaluation, the survey questionnaire, the behavioral mapping studies of the four key spaces, and the
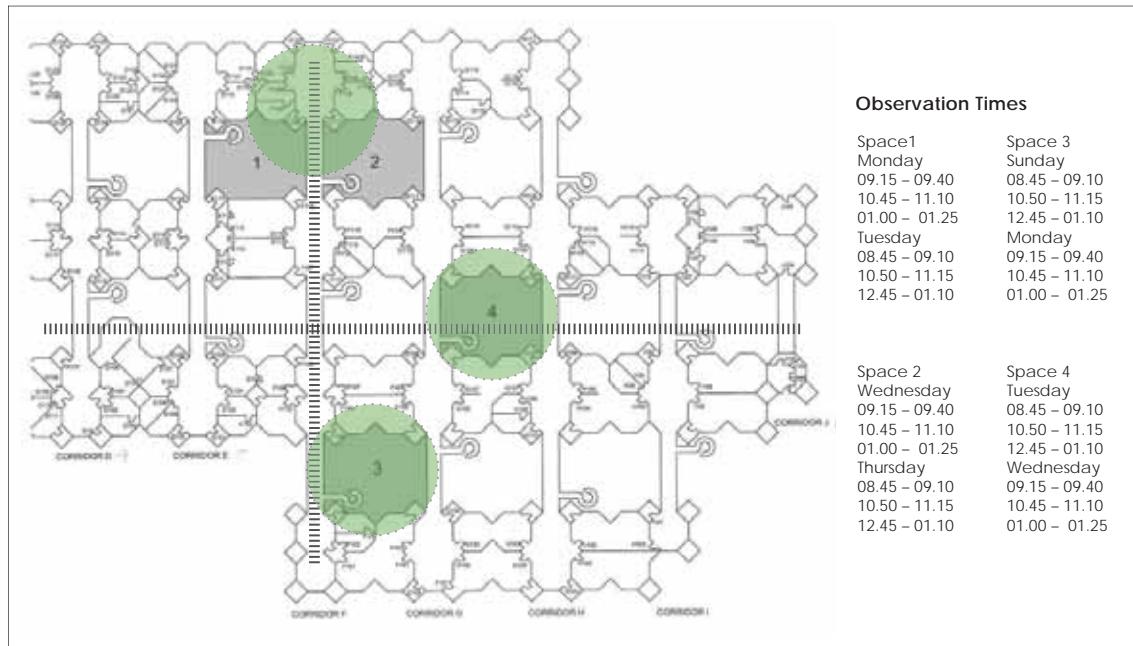

Observation Times

Space1
Monday
09.15 – 09.40
10.45 – 11.10
01.00 – 01.25
Tuesday
08.45 – 09.10
10.50 – 11.15
12.45 – 01.10

Space 3
Sunday
08.45 – 09.10
10.50 – 11.15
12.45 – 01.10
Monday
09.15 – 09.40
10.45 – 11.10
01.00 – 01.25

Space 2
Wednesday
09.15 – 09.40
10.45 – 11.10
01.00 – 01.25
Thursday
08.45 – 09.10
10.50 – 11.15
12.45 – 01.10

Space 4
Tuesday
08.45 – 09.10
10.50 – 11.15
12.45 – 01.10
Wednesday
09.15 – 09.40
10.45 – 11.10
01.00 – 01.25

Figure 6: Four Key Outdoor Spaces within Qatar University Campus, Selected to Conduct the Systematic Behavioral Mapping. (Source: Author).

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direct impressionistic observation.

Walkthrough Evaluation Results

The results of conducting the walkthrough evaluation reveal some alarming scores. Issues underlying contextual and massing category are generally in the middle zone between highly inappropriate and highly appropriate where the total average score is (3.125) on a five point scale (Table 1). In the majority of the issues, similar scores are found. However, it is noted that two related aspects appear to be seen by the majority of students as inappropriate. The first issue relates to the physical appearance in relation to ease of functional identification for a typical user (2.25), and the second issue relates to meaning and finding destination for a visitor (1.75).

Issues underlying interface and visual appearance appear to be a little less than average in terms of appropriateness (2.96). However, there was no similar distribution among those issues (Table 2). This is evident in the scores given by the students to different issues: the effectiveness of the exterior in reflecting the interior functions; the appropriateness and functionality of the connection between the inside and outside; the accessibility of

Contextual and Massing Aspects		
Score: highly inappropriate - 1 2 3 4 5 - highly appropriate		
	Average Score of 58 Respondents	Checklist: Questions
1	03.75	How does the scale of the building suit the site it sits upon?
2	03.75	How does the building suit the pattern of the surrounding streets?
3	03.25	Concentrate on the subdivision of the building's parts as viewed from the outside. Do the parts integrate well with each other and form an effective and pleasing appearance?
4	02.25	Do the subdivided parts of the building appear to have a specific function? Is the function of each part easy to identify?
5	01.75	Is it clear what various subdivisions of the building might mean to visitors? Would a visitor know where to go on entering the building?
6	03.75	Are the various parts of the building planned carefully in relation to one another and to the characteristics of the site?
7	03.50	Is there sufficient relationship between the parts of the building for it to appear as one unified structure?
8	03.00	Does enough variation exist in the structural parts and massing to provide interest and variety?
	03.125	Total Average Score

Table 1: Contextual and Massing Aspects as Perceived by the Respondents. (Source: Author).

Interface and Visual Appearance Aspects		
Score: highly inappropriate - 1 2 3 4 5 - highly appropriate		
	Average Score of 58 Respondents	*Checklist: Questions*
1	02.75	How clearly or effectively does the exterior of the building indicate its interior function(s)?
2	02.25	How effectively does the inside of the building connect with the outside of the building? Are the connections appropriate and functional?
3	02.75	Are the exits and entrances easily accessible?
4	04.00	Are the various openings related to thoughtful planning of the interior? (Consider entry of light, view, privacy, noise, heat, glare, atmosphere, etc.)
5	03.00	Are the exits appropriate from a safety point of view?
6	02.50	When you move from the exterior of the building to the interior by means of the main entrance, is the experience pleasant, interesting, or special in any way?
7	03.50	Are the clues to what is public and what is private space clear to the visitor?
8	03.00	Does the appearance of the building fit in well with the type of buildings surrounding it?
	02.960	**Total Average Score**

Table 2: Interface and Visual Appearance Aspects as Perceived by the Respondents. (Source: Author).

entrances/exits; and the moving experience were scored (2.75); (2.25); (2.75); and (2.50) respectively. While all these underlying issues are below average in terms of appropriateness, other issues were scored as more appropriate including the relationship of the openings to the interior space functions; the clarity of public-private relationship; and the overall fit with the surrounding buildings; these were scored (4.00); (3.50); (3.00) respectively.

Way-finding aspects appear to be inappropriate where the overall average score is (2.062). The only underlying issue that appears to be appropriate as seen by the respondents is (4.00). All other issues seem to be unsatisfied

and were scored (2.50) and less (Table 3). These include effectiveness of routes, traffic patterns around the buildings; outdoor meeting points; convenience and comprehend-ability; visitors' orientation; markings and signs; and the overall signage system.

Survey Questionnaire Results

The 123 responses received from students are analyzed by question in an attempt to articulate how different qualities are perceived by the respondents based on frequencies of responses to options, selections, or scale value. Similar to the walking tour, the emphasis here was only on the old campus.

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Way-finding Aspects		
Score: highly inappropriate - 1 2 3 4 5 - highly appropriate		
	Average Score of 58 Respondents	*Checklist: Questions*
1	02.50	Do the public and private areas relate well to one another?
2	04.00	Are sufficient routes, pathways, streets and passageways provided to and around the building?
3	02.25	How effectively do the routes link the building to the surrounding building or structures?
4	01.50	What are the flow patterns of traffic or people? Are there busy periods, quiet periods, one-way flows, regular movement patterns, traffic jams? Are the routes arranged to consider these factors?
5	02.25	How effective are the nodes (meeting points) for traffic around the building and what happens there?
6	01.50	Do all the routes make sense? Are they understandable and convenient?
7	01.00	Are all the circulation routes within the building easily understood by newcomers, visitors, service people?
8	01.50	How well are the interior circulation routes marked? Are the markings clear and easily understood?
	02.062	Total Average Score

Table 3: Way-finding Aspects as Perceived by the Respondents. (Source: Author).

Rating the Overall Outdoor Spaces within QU Campus

Respondents rated the overall quality of outdoor spaces as fair (25%), good (27.5%), and bad (40%). Only 7.5% of the respondents rated the overall quality as excellent. It is noted that the majority (89%) of those who rated the overall quality as bad gave one or more of the following reasons:
• *"The designer did not do a good job in designing the shading system because they are not enough*
• *The system of routes and pathways is designed without any concern for the students comfort*
• *Not enough green or trees."*

The Best Outdoor Space

Students stated their interest in the best outdoor space in terms of green space, enough shading devices, nice seating, and good meeting spots. An outdoor space that has more green and trees was selected by 34% of the students as the best space, while the one which has enough shading was selected by 28% of the students. On the other hand, a space which has nice seating arrangements was selected by 25%, while only 6% selected a space which is a good meeting spot. It should be noted that 7% of the students have not responded. Answering this question, few students reported that the best

outdoor space as a good meeting spot is not important anymore as they have used to go to the recreational center to meet irrespective of the walking distance they make.

The Best Design Feature Available in the Outdoor Spaces

The three design features offered for selection by the students were Main Pedestrian Spines and Walkways, Outdoor Space Seating, and Presence of Green Spaces, Trees, and Flower Beds. 40% selected main spines and walkways as the best design feature, 22.5% selected outdoor space seating, and 12% selected the presence of green spaces, trees and flower beds. Notably, 25.5% of the students have not responded to this question. While this result may seem to be contradicting with the scores of the way-finding aspects, it should be seen within the context of the choices given to the students.

Way-finding around the Campus and Within the Outdoor Spaces

Asking the students on how easy or how difficult they find their way around the campus and in between the educational buildings, 70% of the respondents stated that it is difficult, while 18% stated easy and 10% stated it is very easy. While this result supports the general assumption of this work, at the same time they correspond to the scores given under different categories of the walkthrough evaluation. The majority of those who stated the there is difficulty to find or discern routes and reach destination in a timely manner wrote one or more of these reasons: "bad signage system", "corridors and buildings all look alike", or "difficult to distinguish between different colleges."

Signage and Sign Design

40% of the students rated the quality of signage and sign design as bad, while 32% stated fair, 21% stated good, and 4% stated excellent. Only 3% of the students have not responded to the question. The majority of those who rated the signage and sign design as bad stated one or more of the following reasons:

• *"Signs are very old, broken and need maintenance*
• *Some signs are just not clear at all*
• *Signs are only available in the main walkways*
• *Signs are not obvious, difficult to read from a distance"*

Lights and Lighting Design

Responding students appear to be satisfied with the lights and lighting system in the outdoor spaces. 92% of the students rated lights and lighting system design as excellent (20%), and good (52%), and fair (20%). However, 6.5% do not feel that the system is good enough. In their responses, those who feel the lights are excellent, good or fair stated one or more of these reasons: "enough lights are available anywhere you go in the campus, the light system matches the design of the outdoor spaces, or the lighting system is so nice and organized."

Seating Arrangement in the Outdoor Spaces

50% of the respondents believe that the seating arrangement is bad, 32% believe it is fair, 11% believe it is good, while 2.5% believe it is excellent. 4.5% of the students have not responded to the question. Those who are not satisfied with seating and its arrangements throughout the outdoor spaces stated one or more of the following reasons: "seats are really uncomfortable cause back pain, seats are never clean-impossible to set on them without getting some dirt on your clothing, while seats look nice in the outdoor spaces they are not shaded enough."

Shading Systems in the Outdoor Spaces

A striking observation is that the result of rating the shading systems in the outdoor spaces corresponds with the result of rating the signage and sign design. 40% of the students rated the quality of seating within the campus outdoor spaces as bad, while 32% stated fair, 21% stated good, 4% stated excellent, and 3% of the students have not responded to this question. Those who do not seem to be satisfied with the shading system reported one or more of these reasons: "the design of shading devices does not allow for enough protection from sunrays, shades are not enough in the majority of the spaces, most of the outdoor walkways are not shaded at all, and by the time we reach the places we want to-we become tired due to continuous exposure to the sunrays."

Overall Safety in the Outdoor Spaces

There appears to be a general satisfaction with the overall safety throughout the outdoor spaces where 70% value the safety aspect as excellent (12.5%), good (35.5%), and fair (32%). While 12% rated safety as bad, 18% of the students have not responded to the questions. The majority of those who stated fair or bad reported one or more of the following reasons: "we have not seen any fire alarm systems of fire equipment in the covered walkways, we never see a security staff walking around the campus and in between the outdoor spaces, the continuous exposure to the sun due to lack of shading may impact our health; the tiling of walking ways is rough and does not make us feel comfortable while walking." On the other hand, a few of those who are satisfied with the safety aspect mentioned: "the campus offers a homey close community style."

Mapping Users Activities in Four Key Outdoor Spaces

A series of maps were drawn for each of the four key outdoor spaces. Observation of the four spaces took place according to the times shown in Table (1), and then combined maps behavioral maps are drawn to reflect the total use of each space by different user types (Figure 7).

The most striking observation is that none of the four spaces is used as intended. No gathering or social interaction among students or among faculty and employees, or between students and faculty take place. Seats in the four spaces are not used at all by any user type during the observation times. This is due to lack or insufficiency of shades or the presence of dust and dirt over the seats. All the four spaces are typically used as circulation spaces either in transitional movement between different sections within the educational buildings, or in direct movement across the educational buildings or colleges.

While spaces 1 and 2 differ in terms of their physical features including trees and seating arrangements, it is noticed that they have similar types of users. In space 1, the number of faculty 9, students 32, employees 21, while in space 2 the number of faculty 8, students 30, and employees 17. However, the number of laborers varies as it is 31 in space and 12 in space 2. These total numbers of laborers appear odd when compared to faculty, students of employees. The only difference between space 1 and 2 is that a total number of five students are observed using their mobile phones in the space standing in the space but in close proximity to its access.

While space 3 was selected because of its close

proximity to the faculty parking and its location along one of the major spines leading to the Dean of Engineering and other College admin offices, it was expected to observe higher number of faculty and employees. However, it is noticed that the combined number of employees in space 3 is 2 while that of faculty is 6. On the other hand, the total number of students combined over six break periods in different days is 55, while 13 for laborers.

The combined behavioral maps of space 4 which was selected as a representative space along the main central pedestrian spine show a different pattern of user types. The number of faculty is 12, which is double that of space 3, the number of students is reduced to 44, while employees' number is 1, and that of laborers is 9. Notably, the presence of laborers in the four spaces needs special attention.
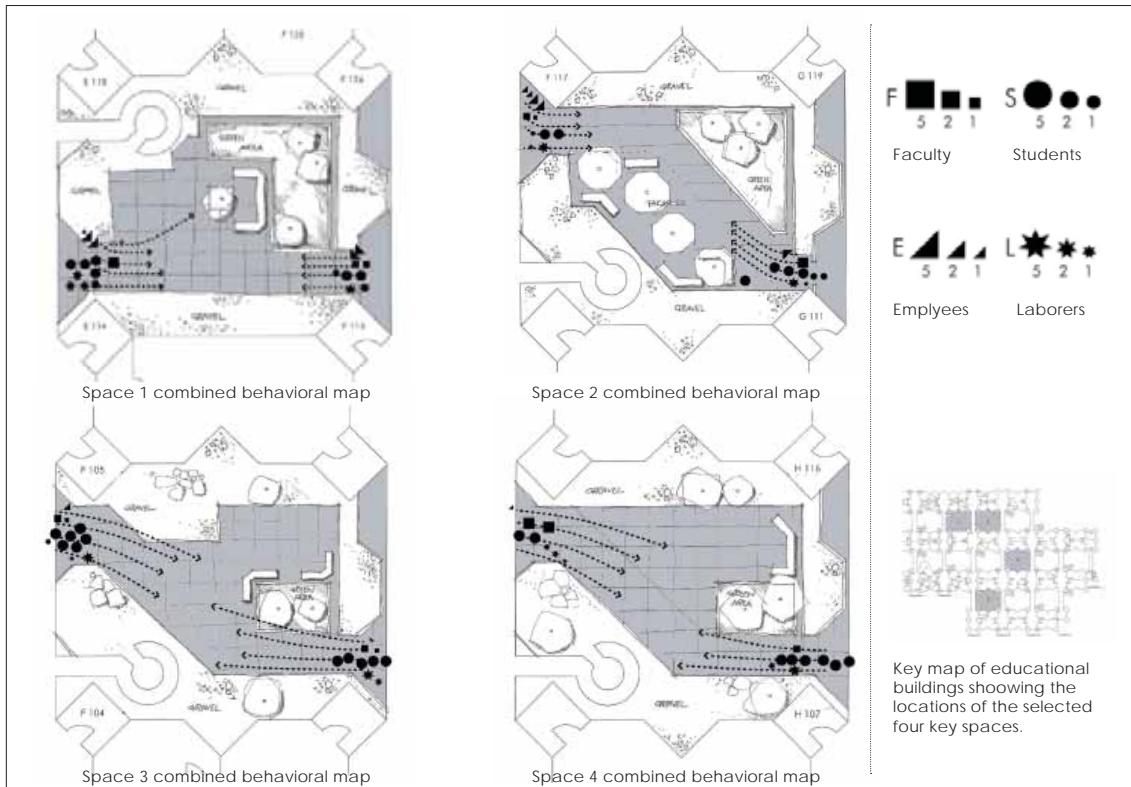

Figure 7: User Types and Activities in the Four Key Outdoor Spaces. (Source: Author).

Direct Impressionistic Observation

The direct impressionistic observation resulted in a series of photographs named "Image Dialogue" where the most important issues are highlighted to reflect and verify the results of the walkthrough evaluation and the analysis of the survey questionnaire. Figures (8) illustrates one of the image dialogues resulted from direct observation.

Image Dialogue 1: Vast Spaces ... Minimal Green and Shading
A series of images representing a considerable number of spaces that do no have greenery, trees, grass, or natural or artificial shading devices. While this represents a safety hazards due to direct exposure of pedestrians to sun rays, it also slows down the movement of students and faculty from one place to another to avoid such an exposure.

The space connecting the north uncovered parking lot with the educational buildings -accessing spine

The space connecting the north uncovered parking lot with the back side of the library building

The space representing a plaza in front of the University Mosque, connecting it with the educational buildings

The large space connecting the educational buildings and the Information Technology Center

The large space connecting the back side of the educational buildings and the University Administration building

The large space connecting the covered parking and the back side of the educational buildings

Figure 8: One of the Image Dialogues Resulted from Direct Observation. (Source: Author).

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Conclusion: A Framework for Improving Qatar University Campus Outdoor Spaces

This paper presented a Post Occupancy Evaluation study of the performance of Qatar University campus public spaces from the users' perspective. The assessment aimed at understanding the mutual interaction process between the built environment exemplified by campus outdoor spaces and the needs of the university community exemplified by students, faculty, and staff. An argument on the value of evaluating outdoor spaces from the users' perspective is developed in order to contextualize the research activity presented. On this basis, defining problematic areas related to the utilization of current public spaces was envisioned in order to develop a framework for possible future improvements. The methodology adopted to achieve the project objectives was multi-layered and involved a wide variety of assessment techniques, including walkthrough evaluation, observation, behavioral mapping, and questionnaires. The investigation revealed a number of problems that may hinder the performance of different types of QU campus users.

It is noted that the walkthrough evaluation and the scoring of several underlying issues reveals inappropriateness in two sets of aspects: interface and visual appearance, and way-finding. As seen by a sample of 58 students, finding solutions to this inappropriateness is important. As well, the fact that many respondents to the questionnaire have expressed their concerns for way-finding issues, seating and shading in the majority of the outdoor spaces, and the overall experience in those spaces reflect the need for certain actions to be taken. On the other hand, the behavioral mapping observation

study illustrates lack of efficiency of the four key spaces examined. Such spaces are used in cross and direct circulation by all user' types but are not used as intended for gathering and social interaction. This was due to one or more reasons that are simply reflected in the results of the walkthrough evaluation and the survey questionnaire.

While this work uncovers a considerable number of problems either at the physical level or at the human level, it is important to note that these problems can be encountered by prioritizing a number of recommended actions that can be exemplified as follows:

Immediate Actions
- Develop a new strategy for the signage system and sign design in order to create an outdoor environment amenable to achieving a responsive learning process. This could be undertaken by installing a new signage system through out the outdoor spaces within the educational buildings.
- Perform regular and periodical maintenance while considering safety aspects. This includes repairing all the uneven tiling and edges of walkways, and the electrical outlets. While maintenance programs might be already in place, the results of this study convey the opposite.

Short-Term Actions
- Develop a new strategy for introducing a series of shading devices which allow for an efficient utilization of the outdoor spaces within educational buildings.
- Develop a new strategy for the treatment of the surfaces of fixed seats within the outdoor spaces. This could be achieved by introducing

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new materials on the top surface of those seats that are easily cleaned and so encourage students, faculty, and staff to use these spaces.
- As the main spines and walkways leading to the education buildings from the parking lots are completely uncovered and un-shaded, a new strategy for developing a series of shading devices in these walkways is urgently needed.
- Foster the utilization of outdoor spaces by organizing regular educational/social events that attract students, faculty, and staff to use the spaces. This could be achieved either at the administrative level of different colleges or at the faculty level in their teaching practices.

Long-Term Actions
- Seeking new forms of pedagogy that integrate learning inside the classrooms with outdoor learning so that current campus outdoor spaces are efficiently utilized.
- Perform space inventory and space utilization and reallocation studies in order to explore possible physical connections between the indoor environment in the ground floors and the outdoor spaces.
- Introduce more softscape elements and trees that maximize shades in the outdoor spaces and thereby enhancing the experience of pedestrians across these spaces while attracting different user types to use the spaces.

The overall analysis of the results shows a dramatic difference between the statements made by the architects and user\s expectations. In essence, a huge gap between design intentions and the parameters examined does exist. Therefore, I argued that by assessing the success and failure of current outdoor spaces of Qatar University campus. Thus, this research offered valuable insights into fostering the educational experience for the campus users. It is anticipated and hoped that the findings will be in direct use by the University administration and are utilized toward conceiving scenarios of actions that ultimately benefit the educational process while at the same time increasing the sense of belonging to the university's physical environment from the users' side. Concomitantly, I assert that the findings pave the way toward the implementation of an articulated framework that facilitates the improvement of the physical condition of the campus outdoor spaces, which in turn would have a positive impact on the educational process. It should be emphasized that the university administration can use the findings of this research in the planning and decision making that pertain to introducing new spaces or the remodeling of existing ones. As well, some of the conclusions can be significantly applied to other campuses on a local or regional scale which may have similar deficiencies in their outdoor spaces.

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