The Importance of Integrating Street Furniture in The Visual Image of The City.

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ABSTRACT *Street furniture is defined as all the setups that are found on the streets that serve many functions related to the usage of the streets in many ways whether directly or indirectly, and that lead to a better usage of the streets as an urban space been used by people, and with these setups, the streets are not only passages of movement, but also living spaces that contains and improves people's lives and human activities, and with the lack of street furniture designs, these setups are considered as barriers and obstacles in the streets that may affect negatively, the functions been performed in the streets.*
This paper is an attempt to shed light on the importance of street furniture design in the urban setup of the city, and how the integration between street furniture and urban art may affect the city image, leading to a better efficiency of using streets not only on a functional level, but also on a more human level.

Keywords :Aesthetic values, Design principals, Maintenance, placement, Street Furniture, Visual

I. INTRODUCTION

Street furniture is an aggregate term utilized for items placed on streets for different purposes. It incorporates seats, traffic barriers, traffic signs, telephone boxes, post boxes, bollards, traffic lights, streetlamps, transport stops, cable car stops, taxi stands, open restrooms, wellsprings, watering troughs, remembrances, sculptures, and waste containers. A vital thought in designing street furniture is the manner by which it influences street safety (Bahita, [1]). Street furnishings give vital comforts to people on foot by adding usefulness and imperativeness to the person on foot place. They declare that people on foot are welcome and that the road is an agreeable spot to be. These pleasantries give a useful service to the person on foot and give visual detail and intrigue. A person on foot enhancements ought to be viewed as an imperative open consumption pretty much as other fundamental components of the road, for example, traffic signs and signage. Enhanced road essentialness has been appeared to enhance people's wellbeing and comfort, strength of neighborhood organizations, nearby land quality, and transportation propensities (Street Furniture Overview, [2]).The importance of this research: tackling one of the most important issues of urban space morphology, in general and in Egypt as well, which is currently clear with the efforts done by the state to enhance the visual image of the Egyptian cities, with a particular focus on Cairo.

The research objective: the integration of the street furniture in urban spaces challenges architects and urban designers to apply new techniques, and incorporate them technically and aesthetically into their designs. This paper aims to discuss and analyze some of the design constraints to contemplate in Egypt and other developing countries when considering the insertion of a street setup in a new design or a space upgrade.

The research methodology:
Highlighting the recent types of street furniture elements.
Discussing the design limits and challenges in designing the street furniture.
Reviewing some international, regional and local trials.
Content analyse for past studies to determine the optimal approach.

II. INDIVIDUAL STREET FURNITURE ELEMENTS

A. Banners

Banners mix it up and add happiness to arterial and commercial streets. They give data on City-supported, City-subsidized, citywide extraordinary occasions and areas of the City's various neighborhoods. Banners are ordinarily swung from utility posts (fig.2) or road lights (fig.1) (Banners, [3]).
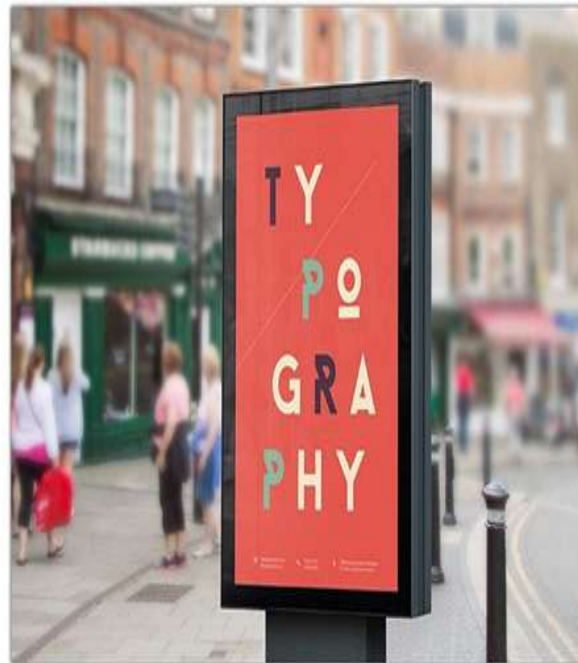

Figure 1: Utility Post banner

Figure 2: Banners hanging from road lights

B. Benches and Seating

Open seating makes an agreeable, useable, and dynamic open environment where individuals can rest, mingle, read, or human watch (fig.4, fig.5). It is a basic signal that can go far to make an essential sense of place. Seating makes places where individuals can see and be seen. This capability to tempt individuals to stay is the sign of extraordinary and fruitful open spaces.

Adding seating to people in public space is a simple road enhancement that can be made by people, group bunches, business regions, and others, regularly as a component of a general streetscape venture. (Benches and Seating, [4])

Figure 3: on-street public bench

Figure 4: on-street public chairs

C. Bicycle racks

Figure 6: uniquely shaped bike racks

Figure 5: Bike racks fixed to the ground

Bike racks or Bike stands is a gadget to which bikes can be safely appended for stopping purposes. A bicycle rack might be unsupported or it might be safely joined to the ground (fig. or some object, for example, a building. There are several styles of racks including the Grid, Bollard, Serpentine, Inverted U, Grid, and Decorative. The best and secure bicycle racks are those that can secure both the bike's frame and the wheels, utilizing a bike lock. Bicycle racks can be built from various distinctive materials. Toughness, climate resistance, appearance, and usefulness are critical variables of the material of the bicycle rack. Construction materials incorporate steel, stainless steel, reused plastic, or thermoplastic. Every material has favorable circumstances and burdens, and each is interesting in appearance from the others. The distinguishability of the bicycle rack, satisfactory spacing from vehicle parking and person on foot activity, climate scope, and closeness to goals are terrifically vital variables deciding the value of a bike rack. These components will build the utilization of the bicycle rack, and guarantee cyclists their bicycle is safely stopped (Alejandria et al, [5]).

Figure 2: Movable bollards   **Figure 2: light bollards**

D. Bike corrals (on-street bicycle parking)

A bicycle corral changes a standard parking lane or walkway zone into bicycle stopping for 4-8 bicycles for each five-foot segment. Bicycles can be parked at 45º to increase paths between people on foot or traffic lanes (Troia, [6]). Bicycle corrals are regular on-road bike parking that utilizes car parking in the curb lane to stop bikes without further stuffing the walkway. Commonly, 24 hour on-road auto parking spaces are

utilized, stopping up to 14 bicycles where one car driver would ordinarily stop. Bicycle corrals are introduced where interest for bike stopping surpasses the restricted space on the walkway or the street behind it. Normally

corrals are fixed close to the crossing point to be close to as many possible destinations for the biker. A further preferred standpoint of utilizing the roadway is its prominent area, where bikes are in full general visibility and close bustling retail and places of work. There are two outlines: vertical bicycle racks (that avoid pedal and handlebar tangles when full) with flex-posts out and about side, and a fresher "parking stall' configuration that is designed in an enclosure on three sides (Bike Corrals Program, [7]).

E. Bollards
Bollards are short vertical posts that were initially implied to be utilized on a boat or a quay, basically to moor. The word now depicts a range of structures to control or direct street activity intake size by constraining movements (fig.9), or to control movement speed by narrowing the accessible space, for example, posts are set in a line to hinder the section of vehicles and can likewise be utilized to portray short, post-like light installations (fig.10) (Bollard, [8]).

F. Community kiosks
Kiosks are those open components in public spaces that provide data, and may incorporate maps, announcement sheets, or other valuable data (fig11, fig.12). They can frequently be joined with passage signage and give an appealing and valuable streetscape component. Community kiosks are commonly introduced by group community like neighborhood or shipper's affiliations, or as a component of a bigger bundle of passageway wide enhancements. Kiosks ought to be situated in the furnishings zone, leaving required edge zone widths and throughway and ought to be put that they don't interrupt picturesque perspectives (Community Kiosks, [9]).

G. News racks
A newspaper rack or newspaper selling machine is a selling machine intended to disperse newspapers, yet their popularity started to go lower as many newspapers changed to online spreading, and as newspaper costs rose and are being substituted by Fixed stand newsracks (fig.14) which can minimize streetscape jumble (fig.13) and make it less demanding for individuals to cross our walkways by lessening the quantity of free news racks on open sidewalks (Newspaper vending machine, [10]).

H. Parklets
A parklet is a walkway expansion that gives more space and civilities to individuals utilizing the road. Generally, parklets are introduced on parking lots and utilized at a few parking spots (fig. 15). They ordinarily stretch out from the walkway at the level of the walkway to the width of the nearby parking spot. They are proposed for people as they offer a spot to stop, to sit, and to rest while taking in the exercises of the road. In occurrences where a parklet is not planned to for individuals, it might give art, greenery (fig. 16), or some other visual courtesy. A parklet may oblige bike parking inside it, or bike parking might be connected with it (Gutenberg, [11]).

I. Public art
Public art is an imperative part of numerous road upgrades. On a huge scale, public art can bring together a neighborhood with a theme or recognize an area portal.
At a passerby scale, it can give visual enthusiasm to bystanders. San Francisco's Public Art Ordinance gives the outlines to the San Francisco Public Art Program. In San Francisco, 2% of the development expense of urban structures, transportation ventures, new parks, and other over the ground structures to be allotted for public art. The city's 2% for the arts system is managed by the San Francisco Arts Commission (www.sfbetterstreets.org) (Public Art, [12]).

Transit Shelters
Transit shelters give cover from the components to waiting riders, and distinguish and offer neatness to the City's transit framework (Transit Shelters, [13]).

J. Public Toilets
The City's Automatic Public Toilet Program was produced due to the absence of adequate public toilets in the city. The project included self-cleaning, available toilets on avenues and public spaces all through

the city. The arrangement of available public toilets makes our streetscapes more welcoming for everybody and cleaner (Public Toilets, [13]).

K. Trashcans

A trashcan is a compartment for briefly putting away waste, and is normally made out of metal or plastic. Open zones, for example, parks frequently have litter containers set to enhance the social environment by urging individuals not to litter. Such canisters in open air areas or other occupied open territories are typically mounted to the wall or ground to debilitate robbery, and decrease vandalism, and to enhance their appearance are occasionally artistic (Waste Container, [15]).

Signage

Signage is the outline or utilization of signs and images to impart a message to a particular people. This is regularly shown through wayfinding data in spots, for example, lanes or within and outside of buildings. Signs change in structure and size taking into account area and plan, from banners, bulletins, and wall paintings, to road signs and road name signs. New signs may likewise utilize computerized or electronic displays. The state of a sign can pass on its message. Shape can be design-based or brand-based, or can be a piece of an arrangement of signage used to institutionalize sign significance. Utilization of specific shapes may shift by nation and society. Signs usually use lighting as a method for passing on their data or as an approach to be visible (Signage, [16]).

Signs might be characterized according to:

Safety and Regulatory: signs giving cautioning or safety directions, for example, cautioning signs and exit signs (fig. 27).

Information: signs passing on data, for example, maps, registries, or instructional signs (fig.28).

Directions: signs demonstrating the location of buildings, practical spaces, and key range (fig.29).

Identification: for example, room names and numbers, restroom signs, or floor assignments.

2.11 great street Games

The series of outdoor games used light projection and thermal-imaging technology to create jaw-dropping interactive playing arenas in which human movement triggered spectacular light effects. The games took place simultaneously in large urban spaces, the scale of the arenas created a vast aesthetic impact on the urban environments in which they were placed, drawing audiences quite often by chance as people went about their daily lives. Curiosity drew people in, but it was the intelligence of the language within these games that held the public's attention and engaged them in problem solving, play and social engagement.

Figure 28&29 Arena in gateshead , England ,The Great North Run Cultural Programme. Completion: 2009. Street furniture, first edition 2010, available on line "at http://dnb.ddb.de"

Design Guidelines Used in Assessing Street furniture

The physical space of man 's environment is made out of the textures, structures, colors, and components. It is vital that unity exist between the aesthetic values molding the artificial components that forms a portion of a city's features and goods ensuring that the best possible relationship is built up between street furniture as a recognized product as well as the place they will be found.

Street furniture must be composed by guidelines from the point of view of anthropometric estimations; consideration must be paid to practical and aesthetic qualities (line, texture, color, measurement, and so on.); and the outline must be exceptional.

For an effective practical observation and utilization of spaces, the outline components must be highlighted, and people's responses and gut senses must be considered as reactions.

Functionality, materials, texture and color, and form are thought to be successful in Street furniture outline. Each of them has its own attributes while planning in urban areas (Ghorab et al, [17]).

L. Form

The form decides the material, measurements and function where the form of an item originates from the functions identified with it and what service it is required to give.

Form additionally assumes an essential part in deciding the character of a spot which is delivered by the attributes of color, texture, materials and form, as well as the social mixtures made by individuals after some time. For instance, if we consider lighting components, we see contrasts in the forms of lighting and the way they are utilized as a part of various spaces in a city. Various types of lighting are utilized to enlighten streets for vehicles, walker ways, squares, gardens and green ranges.

To take another case, if we consider the forms of seatings, we see that these forms influence how they are utilized. Seating components for a few people give other options to individuals who need to sit alone, while seating zones planned with curvilinear forms urge individuals to participate in discussion (Ghorab et al, [17]).

Color:
Color is an important element which fills aesthetic needs and is additionally a major portion of the arrangement of perception, that decides the nature of a public area, including a different profundity and measurement to the planning of urban areas through the foreground of the materials, enlisted components and furniture that are utilized.

Street furniture must be noticeable and with appropriately picked colors to play its roles. Every street furniture ought to have, as opposed to its surroundings, solid chromatic, and sharp colors. Thusly, it can be easily perceived by those who make use of it, particularly the visually challenged.

Bright colors are noticeable, while dark colors and regular colors are more impervious to rust, however visually are not very noticeable (Ghorab et al, [17]).

M. Texture
Texture is a surface where at every level comparative components from lower levels are found. Elements which are compelling in the view of texture are: the quality of the light, angles of incidence, and the shadow it makes; separation (intensely textured components are seen from further away in contrast with lightly texture components); and material contrasts. Street furniture, texture and forms are firmly identified with each other. Texture is vital in the configuration for both aesthetic and technical reasons (fig.32).

Visually, it makes fascinating surfaces and conceals small faults. In making texture, utilizing an assortment of materials is absolutely critical. Other than the physical and visual traits, texture makes a considerable commitment to the structure and in addition to the product's material functionality. It is regular for entirely distinctive variables to be noticed in designing street furniture (Ghorab et al, [17]).

N. Materials
Street furniture is influenced by the innovation of assorted qualities of materials and the streams of style. Besides taking into consideration the function of a design, consideration must be paid while selecting materials to the visual impact that one needs to make in the item that is being composed. There is a difference of materials empowers that empowers the making of various forms, upgrades the visual quality of the items, and improves the design. Street furniture must endure ecological conditions by picking the right materials and their arrangement to confront climatic variables like light, wind and dampness. The best outlines use solid, basic shapes and natural materials.

To the attributes of the material utilized, the security of the item and the mental impacts it makes are critical. Concrete seating units, when contrasted with wooden ones of the same measurements, have a huge and substantial look. The decision of materials shifts relying upon the content and the confinements of the design; imperative issues, for instance, are the furniture's imperviousness to vandalism, the costs included, and how as often as possible its use (Ghorab et al, [17]).

Figure 3: Various materials giving different feelings in Denver, USA

O. *Functionality*

It is very appropriate to have a space that is tangible and personality that can offer joy to individuals, by setting street furniture that is meant for every function, fashionable, and is created financially to fit its needs and can be utilized legitimately and frequently.

For the recognition of street furniture to be functional, the important factor is that it is necessary that it is with regards to human ergonomics. Based on its design, the forms it's made out from ought to be picked with respect to their function, to meet their purposes. If an exceptional street furniture design does not pass on this functionality, then it can bring about issues in the space where it is found (Ghorab et al, [17]).

Figure 4: public seatings meeting the human ergonomics in Vancouver, Canada

III. PLACEMENT

Site Furniture should follow an arrangement on:
- Streets with a lot of people on foot.
- Streets where walkers may wait, for example, downtown, mixed-use, commercial or uncommon roads.
- Streets with a recreational part, for example, boulevards and parks.
- Other roads ought to incorporate site furniture at both busier squares and corners, or where justified by adjoining the use of land and passerby movement. Site furniture ought to be grouped at most of the Transit Stops.
- Usually, on the private roads, back streets and on control augmentations on any road, bunches of passerby enhancements can make alluring and welcoming public spaces in which people living in the neighborhood should be able to eat, play, sit and rest, as well as appreciate people viewing.

Site furniture also have to seen as auxiliary to many road lighting and street. Basically the features of these road lighting and trees should be based on the significant design along the road; there should also be a connection of site furniture with the lighting and trees subsequently when the best areas for these components have been found (fig. 35).

Besides the particular rules for every component the fit of site furniture has to be in accordance with these base prerequisites for walkway component positions, unless generally noted. Site furniture ought to be put in the furniture zone at least:
- 18 inches from the curb's outside edge;
- 2 feet from any garage or wheelchair slope and 4 feet at the ramp's landing;
- 5 feet from any flame hydrant and 2 feet from a stand funnel; and
- 4 feet from any MUNI transit shelter, aside from as noted in Transit Stops.

Arrangement of site furniture ought to consider door swings.

Moreover, street designs tend to decrease streetscape mess by solidifying and lessening the span of different site furniture, for example, utility posts, call boxes, letter boxes, and so on however much as could reasonably be expected.

Site furniture may likewise be put inside control augmentations where walkway widths are reached out into the parking lane (Street Furniture Overview, [2]).

Figure 5: Street Furniture not interrupting the sidewalk

IV. THE ACCESSIBILITY REQUIREMENTS

Every street furniture must be reachable for every American that have the rules and City controls of Disabilities Act (ADA), including (Street Furniture Overview, [2]):

- Site furniture must keep at least four (4) foot of ADA needed accessibility lessons.
- Objects installed on posts or walls with edges over the standard scope of sticks (twenty seven (27) inches) and below the normal head of the room clearance of about (eighty (80) inches) ought to be constrained to a 4-inch most extreme bulge.
- No walkway component may meddle with walker ability to the pass any of the buildings; including the ways of travelling and impaired access prerequisites of ADA.
- Wherever conceivable, site furniture ought to be of a separate color from the walkway in order to help people on foot with visual weaknesses.
- Site furniture ought to leave at least 8 feet of free nearby reachable parking and traveler stacking zones.

V. ENVIRONMENTALLY RESPONSIBLE MATERIAL CHOICES

Site Furniture has the capability to utilize Sustainable materials, including:

- Materials with reused content: the whole of postconsumer reused content in addition to one-portion of the pre-customer content constitutes no less than 20% (in view of expense) of the aggregate estimation of the materials in the project.
- Regionally-reaped materials: materials or items that have been separated, gathered or recouped, and in addition produced, inside 500 miles of the project site for at least 20% (taking into account expense) of the aggregate materials esteem.

- Rapidly renewable materials: materials and items produced using plants that are normally gathered inside a ten-year cycle or shorter for 2.5% of the aggregate estimation of all materials and items utilized as a part of the project, in view of expense.
  - Certified wood: utilize at least half of Forest Stewardship Council's (FSC) ensured wood-based materials for wood parts (Street Furniture Overview, [2]).

VI. MAINTENANCE

With a few exemptions, owners of fronting property are in charge of the on-going maintenance and upkeep of walkway clearing and also all walkway components specifically fronting their property, for example, landscape, trees, and streetscape furniture. For the most part, the City is in charge of keeping up roadway clearing and different components in the roadway, for example, medians.

Ordinarily, if you start road or walkway changes, you will be in charge of support of those components (Street Furniture Overview, [2]).

Practices from Canada – Toronto

A. *Street Furniture Pilot Projects*

During the past several years the City initiated a number of street furniture pilot projects to respond to identified public needs and to increase City revenues. These projects focused on additional recycling containers, better wayfinding and information structures for residents and visitors and efforts to rationalize the proliferation and placement of publications boxes. Although the pilot projects will likely continue through their test period, Council will need to decide how the RFP incorporates the existing initiatives. In addition to these pilot projects, many Business Improvement Areas, in the absence of a City-wide program, undertook their own street furniture projects to improve their neighborhoods.

B. *infoTOgo Pillars*

In 2005 the Tourism Division, in conjunction with the Parks, Forestry and Recreation Division, did oversee the installation of twenty-five pillars on high traffic sites in parks and civic squares, adjacent to roads. Apart from advertising, these pillars provide area and pocket maps specific to the location highlighting areas of interest, historical attractions and public transit stops. Evaluation of this project is ongoing (Vibrant Street, [18])

Figure 6: infoTOgo pillars providing maps to specific locations

C. *Bike Corrals Program*

In 2010, this City was able to make their first installation of the corral in Chinatown on Spadina. Before the plowing season begins, (which usually starts December 1), corrals are taken away and are re-installed in spring time. Presently, two designs are used; the vertically staggered bike racks (which do not allow handlebar tangles and pedal when filled up) with flex-posts placed around wayside, and a brand-new 'parking stall' design that is

closely packed on three sides. For more flexibility in size, bolting racks are placed in the streets. (fig. 37). The self-contained stall is about 5.5 meters in length, the space of one parking stall. (Bike Corrals Program. [7])

VII.   PRACTICES FROM ENGLAND

Figure 37: Bolting racks corral

Figure 38: Bike corral in toronoto

Streets in England have unique historical street furniture that are of different ranges, including milestones bollards, drinking fountains, lamp posts, boundary walls, or even horse troughs. Roads are one of the ancient characteristics of the environment, but always change from time to time thereby, making street furniture associated to it susceptible for replacement, destroying change or eliminating. Today, common materials like drinking fountains are now getting rare (Street Furniture, [19]).

A. Bollards
Bollards were among the most popular types of street furniture that can limit traffic, which was used in the 18th century to stop the impediment of motor vehicles entering into the pathway, to guild over any form of buildings and the entrance path as at Prior's Cottage, West Malling Kent, and to stop traffic or parking. Woods were the earliest example and later replaced by irons. It was in the 19th century that granite was popular; in which their unadorned develop bollards are not possible to warrant the designation of an individual.

B. Street lighting
It started as gas lamps in 1816, followed by cast-iron gas lamp posts that were highly ornamental in a stupendous range of designs. The production of modern electric street lighting can be traced to the Victorian period in the year 1879. The requirement of the modification of gas lamps for electric use was just minor even though, the posts were very thin and tall. The posts of some lamps sometimes had the combination of sewer vents which were working as an extraction of unpleasant air. The fashion of historicist lamp post has been unique in recent decades such as the usage of contemporary way casting old design and one need to be careful when trying to establish the real 19th century examples; one thing that must be in place is lanterns.

C. Street names signs
Historically, street names have been displayed in a number of ways – carved into or painted onto the side of a building, as an attached metal plaque or tile panel or a freestanding sign. These freestanding boards in their initial positions shows the 20th century may allow for a new desigination, however, the fabric they are made up has to be original, and not just a alternative.

D. Bus shelters

Bus shelter is a structure that is connected to a commercial road transport, which dates from the creation of prompt services. In 1830, horse buses were introduced. In the earlier stage, it was made up of timber, glass and cast-iron. To find an example, one needs to go to the seaside location which is along esplanades.

Figure 7: The image represents a bus shelter since 1900 which is built of wood, glass, and cast iron. It has a shringled roof which has the feature of a decorative cast iron on the columns and in between the columns exist wood and also glazed panels having beaded paneling closed in four original woods.

E. Telephone kiosks

The telephones used in kiosks was the earliest telephone and it appeared towards the ending of the 19th century and it was known as K1 design in 1921 and it was constructed with concrete with a red wooden door but was not satisfied with outcome with led to the creation of K2 design that is made up of a Neo-classical cast iron cubicle with a flexible roof and a strip at the corner. it is seen as a masterwork of contemporary industrial design and now has a universal status. A new version is K3 which was created in small number and it survivor is the A K6 known as the archetypical K6 that was established in 1935 which is not has big as the K2 and it has no strips. It is mostly painted in red color with a crown on the upper part of the panels.

Figure 8: The image shows an A K6 type of telephone which is on the EskdateHardknott pass, Cumbriaand Sir Giles designed it in 1935 and created by different contractors from cast iron. The way it is set, makes this example interesting.

VIII. PRACTICES FROM AUSTRALIA

At the present there is no established categorization of street furniture. A classification according to function is illustrated in the following table from "Street Furniture", Takeshi Nishizawa. Other classifications could be based on form/shape, need or purpose in terms of essential services or discretionary services. The classification or categorization of street furniture is an important step in understanding the dangers that exist within the road environment, and balancing this against the intended purpose and benefits from that street furniture. It should additionally facilitate the development of a safe road environment for all road users (NSW Roads and Traffic Authority, [20]).

Table 1

	Classification	Street Furniture	Function
1	Resting tools	Benches with or without backs, stools, outdoor tables, shelters etc	To meet people's needs for resting
2	Sanitation tools	Wastebaskets, ashtrays, drinking fountains, washstands, toilets, etc	To provide people with the means which directly or indirectly concern their health and sanitation
3	Stalls, stands	Kiosks, stalls, public lottery stands, automatic vendors, movable stalls	Tools for selling drinks, food or articles
4	Information tools	Signs, public telephones, mailboxes, speakers, message boards, information terminals, etc	Tools which help people act outdoors, control their activities or are useful to their mutual communication
5	Lighting	Plaza lamps, road lamps, lamps for pedestrians, foot lamps, decoration lamps, spotlights, etc	To make outdoor activities at night easier and safer and to create an atmosphere
6	Transfer tools	Pedestrian crossing bridges, pavements, guardrails, arcades, bus stops, etc	To secure the safety of pedestrians
7	Traffic tools	Traffic lights, traffic signs, etc	To control and operate mainly traffic means
8	Event tools	Banners, paper lanterns, New Year pine decorations, flags of all nations, etc	Tools used in festivals and events
9	Playing tools	Swings, slides, jungle gyms, etc	Facilities for playing in parks with children
10	Maintenance tools	Hydrants, utility poles, manholes, hand holes, etc	Tools for maintaining and checking urban functions
11	Tools for the handicapped	Blocks mounted on the pavement for the blind, signs in braille, signal sounds for crossing, etc	Tools for assisting the movement of the handicapped, including the aged and children
12	Landscaping tools	Sculptures, fountains, planters, patterned pavement, etc	Tools planned for landscaping of the town

IX. PRACTICES FROM DUBAI

A. Dubai Street Furniture Right Angles Air-Conditioned Bus Shelter project
Right Angle joined hands with the RTA in Dubai to develop this world class infrastructure and add yet another landmark to the city of Dubai. Right Angle devised the entire project right from concept stage to completion in a period of 3 years This bus shelter network now spans over 650 locations in Dubai providing a premium commuter experience (Forrester, [21]).

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Figure 41: night view of the Air-Conditioned Bus Shelter

Bus Shelters have managed, in less than six months from the first study in Nov 2008, to improve its ranking through the top 3 OOH media in Dubai on spontaneous brand awareness to rank no. 1 (all figures in percentages)
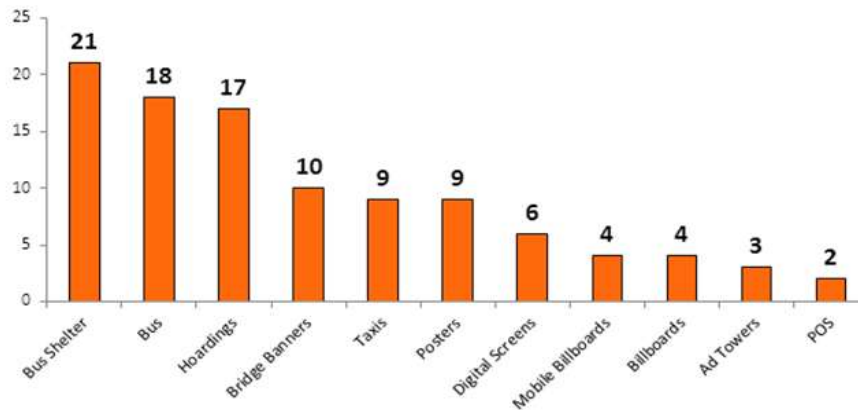
Figure 42: Air-Conditioned Bus Shelter

Visibility and frequency of the medium are two of the main reasons Right Angle bus shelters score well over other OOH Medias.
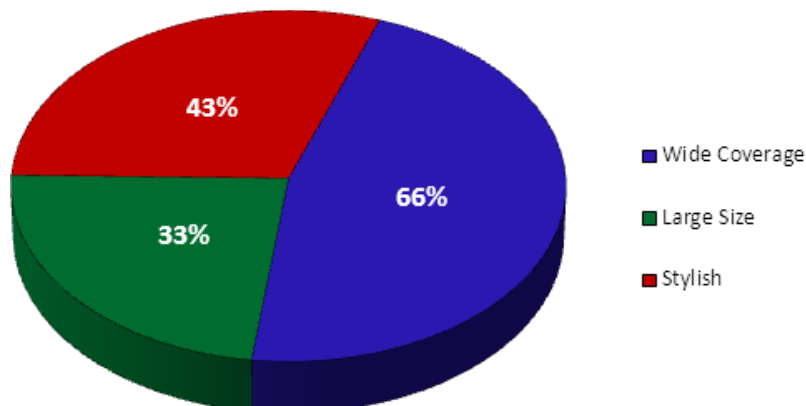
B. *Bicycle Parking*

The following are general design criteria for bicycle parking facilities (Abu Dhabi Urban Street Design Manual, [22]):

- Locate parking in furnishings zone, out of the through zone or driveways, on curb extensions within 15 m of the main entrance or between buildings.
- Provide longer term bicycle parking in convenient, shaded, well-lit, and secure locations.
- Provide directional signage if parking is not readily visible to visitors.
- Bicycle lockers should be provided to encourage bicycle commuting. Bicycle racks are to be durable and securely anchored.

They are to be designed so that:

- The bicycle frame and at least one wheel can be locked.
- The bicycle frame can be supported in at least two places.
- Rack spacing is such that bicycles can park without disturbing one another.
-

Figure 9: Different types of bicycle racks

C. *Streetscape Furnishings*

Design and selection of street furnishings in accordance with the following considerations (Abu Dhabi Urban Street Design Manual, [22]):

- A palette should be developed for each streetscape project that includes furnishings, parking meters, electric car recharge stations, shade structures, lighting, trees, landscaping and paving. Choose materials and styles for maximum durability, comfort, safety, security, and usability. The palette should illustrate how the streetscape will enhance the identity and character of the corridor and surrounding district in accordance with municipal requirements.
- Concentrate streetscape furnishings where pedestrian traffic is regular and furnishings will receive use and appreciation (such as within shaded areas of the street, transit stops, and near intersection crossings and building entrances).
- Locate furnishings primarily in the furnishings zone, and secondarily in other areas, such as intersections, transit stops, and edge zone, where they are needed and where space permits.

Table 2

Streetscape Furnishings		
Hanging Baskets, Banners	Planting Boxes/ Pots	Other Amenities
• Add color, life, identity to the streetscape • Maintain horizontal and vertical clearances	• Add color, life • Maintain horizontal and vertical clearances • Maintenance needs should be considered	• Custom designed shade shelters, street clocks, and other elements add unique identity to the streetscape • Public art and water features

Street Signage

Signing and wayfinding elements shall be cohesively integrated into the Emirate of Abu Dhabi urban street system. Signing and wayfinding should function well and establish a sustainable identity and memorable sense of place in the street network (Abu Dhabi Urban Street Design Manual, [22]).

- Establish consistent design standards and guidelines for all signs (materials, color, scale, type, location, etc).
- Enhance the visitor experience with key placement of signs.
- Ensure that signing and wayfinding elements are consistently placed and are not inadvertently located; avoid their placement becoming an impediment or barrier to pedestrians and bicyclists or an obstruction between sight lines.
- Establish the brand and a unified visual language for the street network, as well as a recognizable hierarchy.
- Reinforce primary gateways and landmarks.

Placement of Signing & Wayfinding

In general, design and placement of signing and wayfinding should be consistent.

- Avoid interfering with pedestrian travel; do not locate signs in the through zone.
- No signs or advertising structures shall be placed within 10 meters of junctions.
- Minimize sign clutter.
- Avoid conflicts with underground utilities.
- Provide flexibility for expansion and change in the signing and wayfinding system as needed.

Types of Signs

The following is a list of types and locations for a variety of signs. Identification Signs Identification signs indicate special places and are used to welcome people and orient them to locations and services. In this context, identification elements include vehicle, pedestrian, and transit identification and should be placed within the edge zone.

Direction Signs

Streetscape Furnishings				
Tree Grates and Guards	**Custom Manholes/Utility Screens**	**Kiosks/ Pedestrian Signs**	**Transit Stops/ Shelters**	**Drinking Sinks/ Ablution Sinks**
• When combined with tree pits/boxes and good sub-structure, grates can provide enhanced growth environment • Guards only needed in areas where trees are susceptible to damage	• Can screen unsightly elements • Add character and interest to the pedestrian realm	• Locate in key areas where pedestrians may change their route; pedestrian gathering areas, etc. • Should be professionally designed by graphic artists	• Maximize shade • Provide lighting for security • Can be customized with special designs, artist and community involvement	• Provide only in essential areas, such as pedestrian gathering areas and mosques • Provide good drainage to avoid wet surfaces • Provide accessible height drinking fountains

Vehicle and pedestrian direction signs direct people to destinations within a city. Vehicle signs are meant to be read from a car and shall be placed in the edge zone or the median, and can span over the travel lanes. Messages typically include directions to destinations and parking. Pedestrian signs are intended to be read while walking and may be placed in either the edge or furnishings zones. Maximum three (3) messages per vehicle signs. More messages may be listed on pedestrian signs.

Information Signs

Information signs are intended to give people more detailed information about the city's environment. These signs may include information pertaining to parking information, location maps, hours of operation, listings of tenants and services, site and project directories, and other public information. They are placed within the furnishings or edge zones.

Regulation Signs

These signs communicate laws and regulations to the public primarily for vehicle traffic regulation. Design and placement of these signs shall comply with DOT standards and requirements. They are placed within the edge or furnishings zone, depending on if they are directed at vehicles or pedestrians.

Figure 6.8 Primary Vehicle Direction Sign in the Median or Edge Zone

Example of a primary vehicle direction sign.
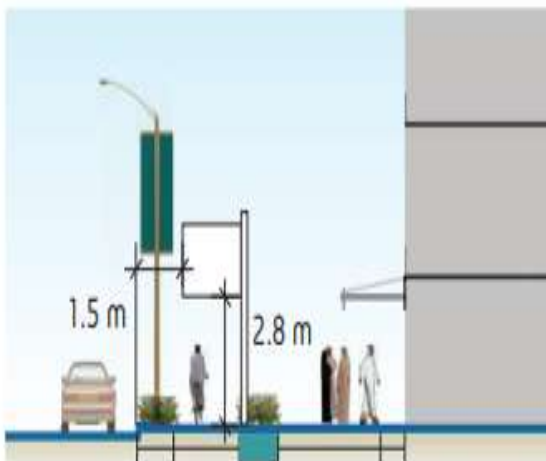
Figure 6.9 Secondary Vehicle Direction Sign in the Furnishings Zone

Example of a secondary vehicle direction sign.

Figure 6.10 Regulation Sign in the Edge Zone

Example of a regulation sign.

Figure 10: Different Types of signs

X. PRACTICES FROM EGYPT

A. The Hole in the Wall Project

Owned by Bibliotheca of Alexandria, this activity depended on introducing free internet street stands in country regions for kids who are new to PCs and the Internet letting their interest intuition drive them to investigate and self-learn. At the backend of those booths, there is an entryway holding some fascinating websites for youngsters, including games, stories and instructive tools which were installed by the Bibliotheca of Alexandria (WSIS, [23]).

Figure 11: a little girl investigating the computer installed in the wall

B. Squares Sculptures

It has been observed lately the disgraceful sculptures in the public squares all over Egypt that don't mean anything and could also have been replaced by other meaningful sculptures.

Figure 12: A food product bottle sculpture in the middle of a public square in Cairo.

Figure 13: Different sculptures for public squares all over Egypt.

XI. CONCLUSIONS

Street furniture are components planned for beautification, as well as to give solace, relaxation, transportation, excitement, and insurance from outside impacts. The right arranging, designing, planning, locating and customary upkeep of the street furniture is critical.

Street furniture are critical as a result of their usefulness, as well as integral and characterizing visual components of urban spaces.

Street furniture is utilized particularly for visual reasons affecting spaces positively, so besides being functional, aesthetic concerns should be taken in consideration so they won't affect the surrounding negatively and would give the urban they are located in an identity.

Designers design stylish street furniture besides their usefulness and functionality, and with new and imaginative thoughts to make items more attractive. What's more, during the time spent on furniture designing, by including their own encounters and imagination, while considering general standards of texture, structure, material, and color, they assume an essential part in expanding the clients' mental comfort and enhance the beauty of the surrounding urban environment.

Street furniture are more tastefully satisfying if it had rhythm, balance, unity and a blend of usefulness and beauty in its configuration; and if it had geometric structures, colors, fine textures; than if hard materials were utilized.

At last, it is the aesthetic standards that designers shape the street furniture designs in which texture, color, material and form are taken into consideration may assume a dynamic part, reliant upon the necessities of a space and the decisions made by the designer.

To put it plain, on designing street furniture considering aesthetic concepts and utilizing compelling standards it is guaranteed that while each urban space's environment is enhanced, individuals' mental comfort can likewise be expanded.

The urban in general, reflects the status of the society, the environment, and the local culture and identity. Therefore, all the space elements must represent the individuality of the space and serve the civil society. The Misuse of such application or element might lead to a local identity loss and frustration. Based on the actual growing public admiration and need for the street furniture, it's clear that a space's ability to serve as a cultural vector will be one way to define the urban morphology. To some developing countries, building and applying such solutions is regarded as a strong statement about the country's economic, cultural and societal status. From all of the previous discussions, the following SWOT analysis has been derived.

	Strength & Opportunities	Weaknesses & Threats
Urban space	Generating new landmark buildings structures and spaces. Reframing existing important spaces, and increasing the level of functionality. New way of content presentation combination with arts representation	Amplifying the artistic aspect could cause a diminishing in public interest." In some types , that are based on lighting " Rising the energy consumption May cause and lead to impaired pedestrian movement and traffic.
Urban Development	It can help in redefinition of urban spaces in a new modern and 'smart' way New way of promoting tourism and economical sites development. Suitable for mass social interaction in general and during major events in huge cities.	The risk of losing the traditional local identity, or at least negatively affect it. May be, as a direct result of human activities, the Increase in the light/sound pollution level which can lead to several negative impacts to humans, animals and plants.

XII. FURTHER RESEARCH THAT COULD BE DONE

Further research could be done on the topic from the environmental and economical perspective and how we can apply the guidelines of designing street furniture used internationally in Egypt.

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