

Study on the Influence of Cladding and Finishing Materials of Apartment Buildings on the Architectural Identity of Amman, Jordan

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Abstract—Analyzing the old and bringing in the new is an ever-ongoing process in driving innovations in architecture. This paper looks at the excessive use of stone in apartment buildings in Amman and speculates on the existing possibilities of changing the cladding material. By looking at architectural exceptions present in Amman, the paper seeks to make the exception the rule, by adding new materials to the architectural library of Amman and in turn, project a series of possible new identities to the existing stone scape. Through distributing a survey, conducting a photographic study on exceptional buildings and shedding light on the historical narrative of stone, the paper highlights the ways in which new finishing materials such as plaster, paint and stone variations could be introduced in an attempt to project a new architectural identity to Amman.

Keywords—Architectural city identity, cladding materials, façade architecture, image of the city.

I. INTRODUCTION

AMMAN is a city beaming with sound against stone enclosures; a relatively modern city which was built starting from early village settlements amidst Roman ruins to present day multistory residential buildings covering its mountains (Fig. 1). Old with history and new with potential, Amman raises questions about its architectural image and identity.

Nagashima [11] compared architecture to the infinite- that which is not built- stating that “the stone walls, ceilings and floors are boundaries against the infinite; they are physical references proclaiming man's identity.” The built is described as a form of demarcation, or proclamation of territory expressing the identity of the builder. Extending Nagashima's comparison to the urban scale, where the boundaries against the infinite become urban components and buildings, one could start to perceive the city as the builder expressing his/her own identity. Works of architecture are objects of human identification that embody existential meaning [14]. They not only speak identity but also express it via building façades. Kevin Lynch -literary pioneer in city image- describes building façades as “integral and inseparable component(s) of city image,” they are the voice of a city, speaking culture, economics and lifestyles, and in Amman, tradition.

Riza et al. [12] argue that the image of a city is considered one of the most important key concerns both for city identity as

well as city branding. Image of the city was explained in terms of quality of life and the way in which distinguished cities have a greater quality of life. Lynch also defines identity as “the extent to which a person can recognize or recall a place as being distinct from other places”. Identity is “how your otherness could be observed” [14]. The differentiation allows for way finding, and city characterization. Examples of this view are numerous. For example, New York City is identified by the bars of Broadway Street, the lights of Times Square, the glazing of the high-rise buildings, and the expansiveness of Central Park. Dubai is identified with the sky scraping Burj Khalifa, the overwhelming sand dunes, the land arching developments and its above ground metro stations. Amman is identified with a continuous scape of stone buildings, two under construction high-rise buildings, and Al Abdalli Boulevard. But the exceptions are few, and the majority of the residential stone apartment buildings overwhelm Amman's identity with repetition. Due to large influx of residents to Amman, the construction of residential apartment buildings has been increasing. They have been constructed seemingly by the same architect. Stone, square windows, rectangular mass, single entry, balconies and of course, stone (Fig. 2).

II. AMMAN CITY

The discourse on the image of the city sheds light on iconic buildings, differentiation and not the homogeneity existing in Amman. Though Amman's sameness in materiality could be regarded as a characteristic of the city, its coupling with same building height and same building typology makes it monotonous. In an identity scan, Amman reads as a holistic homogenous set of stone-cladded buildings; masses overlapping, and orders repeating. In this paper, a survey conducted asked 40 architects in Amman what they believed constituted Amman's architectural identity, and showed that 90% believed that the repetitive use of stone in buildings' envelopes formed Amman's architectural identity. However, when asked whether a change in materials would change the identity, 70% responded positively (Table I). This triggered the speculation on whether Amman's architecture could be re-imagined through simply introducing new cladding materials. In pushing for a break from the same, i.e., the use of stone, this paper proposes alternative materials/variations that will change

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the appearance of buildings and, in turn, the image of the city.



Fig. 1 Downtown Amman; *Al Balad*. Photo taken by Asil Zureigat



Fig. 2 Typical apartment buildings in Amman. Photo taken by Asil Zureigat

TABLE I
 SURVEY RESULTS ON THE EFFECT OF CLADDING ON CITY IDENTITY

Survey Question	Yes	No
Do you think Amman has a distinct architectural identity?	70%	30%
Do you think the repetitive use of stone in buildings' envelopes constitutes Amman's architectural identity?	90%	10%
Will changing the finishes/materials used in building façades change the architectural identity of Amman?	70%	30%

Rasem Badran, a pioneering architect based in Jordan, found the thread between antiquity and modernity by maintaining traditional spatial relationships but used modern materials such as steel, glass, and stucco. His design of the royal palace and great mosque in downtown Riyadh used modern construction materials and techniques to “monumentalize traditional forms to fit new functional and symbolic requirements” [3]. Traditional organizations and materiality have been passed on by generations of architects and builders in the region.

Amman has been influenced by several migrations to the city, starting from the Sharkas, the Kurds to the Syrians, Lebanese, and Palestinians. Stone was the main constituent of buildings built in that period, seen in Al Mortada House 1925, Al Arif House 1923, and Al Sharif Zaid bin Shakir House 1928.

Stone was used because it is a readily available material. At the times of the Roman Empire, this was driven by the sense of sustainability which was practiced but not defined at the time. Accordingly, not only one type of stone was used, they used

any stone available in local sources. For example, in Um Qais in the northern part of Jordan, where stones are mostly black basalt stones, they were used to build everything from homes to stadiums. Also, in Al-Safawi town in the east desert of Jordan, these same basalt stones are the only type available there, and were used by the British oil company, BP, to build the housing for the pumping station of oil coming from Iraq to the Mediterranean Haifa port in Palestine and expanded later as a housing complex for the air base personnel in the nearby Prince Hasan Air Base. Every builder used the available stone closest to their home for accessibility. For example, builders used limestone in the northern, central and western region of Jordan and used basalt stone in the northeast and sandstone in the far south of Jordan [13].

It is clear that the same method of using local stone materials practiced in Roman cities such as Jerash, Philadelphia (Amman), where lime stones of different colors were used, is still used today in Amman. However, with the rise of the industrial revolution and the advent of artificial building materials such as cement, metal, plastic, glass, and finishing materials and paints, buildings have changed drastically; not only in shape but also in height as the new materials properties are strong enough or strong and light enough to allow high rise buildings to be constructed such as the Empire State building in New York or the Burj Khalifa tower of Dubai. “Gone are the

days when the architect was forced to use building materials without being able to exert influence on their design and quality. Now the architect not only invents new uses for familiar products but also influences the design and quality of new materials” [7]. The architecture of buildings has been influenced progressively as new building materials were introduced into the market.

Stone in Amman evolved to include different finishes from polished, tobzesh, flamed, saw-cut, rubble, untreated to zamleh and barrel-shaped [6]. But the most common use was resorted to quarried limestone colored white or yellowish. Two regions in Amman were chosen as case studies to highlight the prevalence of stone cladding, specifically yellowish or white limestone.

III. STONE TERRITORIES

A. Al Balad

Al Balad or downtown Amman is the oldest district in Amman where stone was used as cladding. Historically, stone was the building block for all works of the Ammonites, the Greek, Roman and Islamic civilizations that crossed Amman. To this day, the works of the roman civilization stand in downtown Amman such as the Roman Amphitheatre, the Rhodium, and the Forum. Stone was also used by the Ummayyads and the Abbasids in building forts and an administrative center in the greater Amman area. Recent history examples include the duke’s Diwan 1924, Shabsog Street 1867, Al Hussein Mosque 1923, and the Esaly House 1944 (Fig. 3).

The majority of the buildings in *Al Balad* date back to the 1947-1973 period. Fig. 4 illustrates that few buildings were built in the early 2000s and the majority in the 1900s.

The range of stone types most commonly used for façades in downtown Amman include Tabbazah limestone- used for villas, sandstone, detonator stone and Ma’an stone- extracted from south of Jordan from the city of Ma’an, all colored yellow or white.

The question on a historical district such as *Al Balad* persists; is stone a representative of the image of the city? Given the historical usage of stone in the region, could one change that for a more modern take on building cladding?



Fig. 3 (a) Duke’s Diwan. Photo taken by Asil Zureigat



Fig. 3 (b) Al Hussein Mosque. Photo taken by Asil Zureigat



Fig. 4 Age of buildings in *Al Balad*. Produced by Ayat Odat

B. Shafa Badran

Shafa Badran is an area located in the northern part of Amman, and it is considered relatively new due to recent residential construction projects ongoing in the area. These buildings serve as an example of most of Amman’s residential building typology.

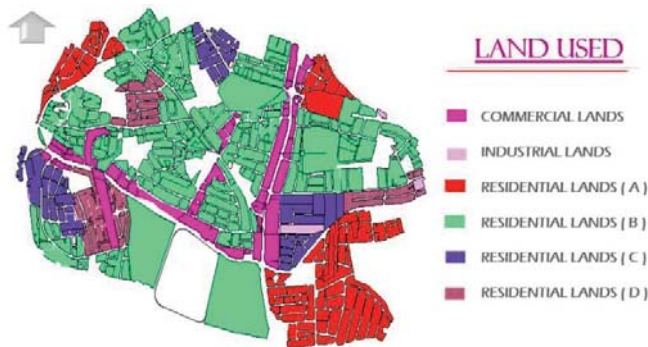


Fig. 5 Shafa Badran district buildings. Produced by Ayat Odat

It is about 20 kilometers away from central Amman. The term Shafa Badran was coined as two terms, the first meaning fresh air and the second, Badran, relates to an individual who

sought the area for healing of his illness. The area was built amidst still-existing roman monuments in the village of Kom Yajouz. Other historical stone constructs include the Abdullah Basha Dawoud Mosque which dates back to the Ottoman Empire. Shafa Badran consists of eight neighborhoods (Fig. 5), which are no more than 40 years in age.

The area incorporates residential type buildings, commercial buildings, industrial buildings/areas as well as educational buildings. Residential buildings occupying the hilly terrain of Shafa Badran appear as echoing the rise and fall of the topography (Fig. 6).



Fig. 6 Shafa Badran, Amman, Jordan. Photo taken by Ayat Odat

The persistent architectural characteristic of the buildings is the excessive usage of symmetry and stone in building façades. Building heights range from four/five to a maximum nine floors. This results in a frequency of building height specific to the area and is applicable to all residential buildings in Amman due to restrictions imposed by the building codes of practice. Building typology is dependent on proximity to main streets. Buildings located near busy roads incorporate commercial outlets at the ground floor and continue as residential on the top floors. Buildings located on innermost roads are completely residential (Fig. 7).

transform the existing building terrain into a luscious eclectic concrete jungle of architectural creativity. A new image of Amman forms when builders start to look back for inspiration and not for repetition, and when new cladding materials are adopted.

A. Stone Variations

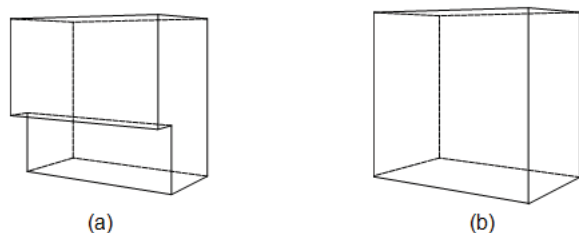


Fig. 7 Building typology: (a) commercial integration vs. (b) residential. Produced by Asil Zureigat

Al Bari stone surrounds most of the residential building façades, in addition to raw Tabbazeh stone. Stone is described as the architectural element forming the basis for the current Jordanian architectural identity [13]. Buildings in Amman are generally similar in their use of stone with few exceptions that will be the subject of the discussion in this paper.

IV. THE EXCEPTIONS

Architectural exceptions in the city raise questions on whether the exception could become the rule and in turn



Fig. 8 Ard 334 Apartment Building, 2017, Amman, Jordan [4]

Ard Designs is a local architecture firm that rethinks the conventional apartment building via the use of black and white stone and via exaggerated asymmetry (Fig. 8). The building stands out to “break the uniformity that plagues the Jordanian scape” [4]. It adopts the basic Amman apartment building architectural elements such as balcony, single entry, symmetry and windows but in a fashion unlike the standard. The use of black stone introduces a new material to the architectural library and that could be used by architects in the city.

Reminiscent of “white modernism” [9], the building appears

somber yet loud, simple yet complex and traditional yet modern. The approach is significant for it implies the possibility of such constructs to appear in Amman, for building cladding to have variations of stone colors and cladding strategies. It is not the composition that is so distinct as much as it is the use of black stone to distinguish the building from other buildings. Black stone could become the new cladding material the way it was used in Abu Darwish mosque's *Ablaq* in downtown Amman (Fig. 9). This is to propose a movement that embraces modernity and abandons roman fenestrations to restrained compositions, stone balustrades to glass, stone cladding to other color/cladding variations, symmetry to asymmetry, or in Amman, stone variations to the repetitive use of Limestone (Fig. 11).

Existing quarries in Jordan produce different colored stone, including gradations of yellow orange and white, pink, brown, black, beige, red and brown [6]. Only yellow or white limestone is mainly used for most of Amman's residential apartment buildings, with variations of finishes.

B. Paint

Seyam Architects is another local firm, which introduced colored paints to balconies in their UN affordable housing project; manipulated massing for vertical circulation shafts and shifted color across the façade to window articulation. A language if adopted by other architects in the city will reveal a new Amman.

Color solely is an “international visual language understood by all” [10] and is a transformative tool in architectural expression for it influences us psychologically and physiologically. According to principles of psychosomatic medicine, physical disorders may originate through psychological factors. Monotony, such as that existing in Amman, signals under stimulation which causes restlessness and irritability.



Fig. 9 Abu Darwish Mosque, Amman, Jordan. Photo taken by Asil Zureigat



Fig. 10 Color variations projected on Amman façades, *Al Balad*, Jordan. Produced by Asil Zureigat

TABLE II

SURVEY RESULTS ON THE ROLE OF COLOR IN FORMING CITY IDENTITY		
Survey Question	Yes	No
Might a change in color of buildings' façades bring about a new architectural identity?	70%	30%

The survey conducted also asked 40 architects in Amman whether a change in color would bring about a change in city identity and 68% responded positively (Table II). Based on that, the paper invites the reader to imagine a district in Amman or even a street gleaming with color (Fig. 10), such as the blue Chefchaouen city in the mountains of northwest Morocco, or the mounting climbing colorful houses of Cinque Terre in Italy or those in Guanajuato, Mexico. Imagine if each hill in Amman was identified with a color or colorful landmarks were introduced in the city such as the Pompidou Center in Paris.

Color was used subtly on façades by Le Corbusier, and the Rietveld Schroder house by the De Stijl movement and many other examples exist for inspiration.

C. Plaster

Abu Samra house presents itself as yet another rebellious example “By rejecting the conventional use of stone.” [1] Nahhas, the founder of Symbiosis LTD, denounces “the conventional use of stone in Amman and by extension both its texture and the whitish tones associated with most examples of this material in Amman” [2]. Instead, he uses an earth-toned plaster as an economic solution that complements the dry local landscape and strong Jordanian sun. The building echoes the desert landscape around it via the restrained earth-color of plaster used. Plaster finishes are common in Jordan which

presents the possibility of extending the use of plaster to residential buildings. It is easy to add color to the plaster mix to avoid sameness while reflecting the pleasing power of color demonstrated in nature as the seasons come and go.

Plaster was used in several cities to give them identity such as in California/USA where specific mixes produced by the American O. A. Malone called “jazz plaster”, “put color into California” [5].



Fig. 11 Blue Fig Restaurant, Amman, Jordan. Photos taken by Asil Zureigat

Symbiosis LTD's first project was the Blue Fig Restaurant (Fig. 11) in Amman, which also used earth-toned plaster as a finish and was distinct for its abstracted reductionist geometric forms, large glazed panels and of course the earth-toned plastered surfaces which served as a striking contrast to the white limestone covered buildings and their more conventional use of small punched openings that are characteristic of buildings in Amman [2].

Plaster dates back to the Neolithic period in Jordan in which excavations in Ain Ghazal village along the banks of the Zarqa River region found plastered statues and dwellings. Plaster was also commonly used on the inside of houses for example in the village of Samad south of the city of Irbid [13].

In the 19th century Jordanian Fellahi peasants used to mold their houses from mud-based plaster. An idea that Ammar Khammash, a local architect, found inspiring and, based on it, built the Feynan Eco-Lodge in Wadi Araba [8]. The lodge used plaster as part of a strict low-cost policy, the wall protrusions serve the function of louvres and the deep insets of windows create great shaded regions in the openings. The domes were made of “3-4 cm of plastered chicken wire” [8].

V.CONCLUSION

In this paper, the image of Amman city is illustrated via building façades and to re-imagine Amman, one must first re-imagine the cladding material most commonly used; stone. If buildings were to simply deploy the different colors stone is available in, that would suffice in changing building image and identify each building as distinct from the other. City identity lies in district differentiation, and the public's identification with their places of residence. Thinking of cladding materials/

finishes is merely a step in speculating the change of city identity. Beyond the finishes lies a whole discourse on building typology, massing, and spatial organization. However, given the immediacy and effect of visuals on people, what become important in a resident's perception of a city are distinguished places that give their inhabitants and the city, a name, a slogan, a visual memory, an association or even a clock for residents and frequent commuters. This propelled the writing of this paper and the attempt at highlighting the ways in which changing the tools used in cladding and façade making, can make districts become landmarks in themselves which in turn aid in city identification.

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