

THE EFFECT OF STAIRWAYS ON THE SPATIAL QUALITY OF TRADITIONAL URBAN PATTERN IN JORDANIAN CITIES

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ABSTRACT

The paper looks into stairway as an agency by means of which a unified field of space is created in some Jordanian cities, where topographical pattern has impressed itself strongly. Stairways have functionally equivalent parts and create a balanced interaction in the urban environment.

The paper shows how people living in terraced houses around the stairway enjoy their private access, and the intimacy in the residential area is preserved. People enjoy the view from their houses and while

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going up and down. The visual field to them is far larger below in the down town area. The urban environment reflects a genuity of a culture, and houses articulation emphasizes identity over a range of a city.

The paper explain that with the new conception of life "car", streets suppose a continuous charge of the city growth. Alignment and access are related to street rather than site conditions, for vehicular access is nowadays mandatory.

The paper suggests that, the spatial revival use of the inhabitants explain the importance of the study of the spatial quality in the environment.

Stairway and Urban Design; Introduction:

Giedion who described stairway and terraced buildings, wrote; "Terraced buildings and monumental stairways go back to the beginning of architecture. Stairways appeared for the first time in Ziggurates of Summer around 2000 B.C. Pyramidal flights and steps formed the plinths of the temples and the processional approaches to sunken courts are a conspicuous feature of pre-Columbian Mexican architecture. "Vertical axiality has been unified with the theme of terraces longitudinal path in Hatchibust's Deir al-Bahri morturay temple, an expressive system of synthesis, as described by C.N. Schultz. The renaissance builders strived to bring horizontal surfaces lying on different planes into relationships with one another. It is analyzed by Giedion too, and he wrote; "By imposing monumental stairway left open to the sky. They used stairway as an early attempt to convey the perspective in depth in terms of architecture. Figure (1) shows Petra's stairway engraved in the rock.

When we walk about stairways, we mean a device that is as old as architecture. Man, normally, uses stairways in order to ease the climb. He is always powerfully attracted to the problem of movement. He tries to avoid cliffs and takes the least resistance. Eventually, he introduced a stairway as a new element into urban architecture. A stairway is an independent structure, but an agency by means of which spatial areas are articulated and woven into a spatial unit. The role of a stairway is to merge a unified field of urban space.

The contribution of a stairway as an organizing element is effective. Where, the topographical pattern has impressed itself strongly on many cities, towns and villages in Jordan. The topographical pattern has controlled the city's (Amman, Salt, and Karak) lines of communication and its building development. In Amman and Salt, "The rigid control by topography has many effects, mainly adverse on the modern city. Amman is built on a series of deep set wadis* alternatively with the jebels** or bluffs which projected like frigers. In Salt the situation is almost the same but with a less number of jebels and wadis. (Fig. 2).

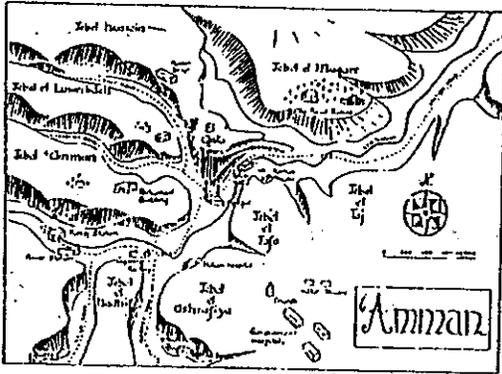
In both cities (Amman and Salt) houses and buildings spread along the wadi and the more accessible slopes of the nearest jebel, until the top of the jebel. The inhabitants who immigrated to Amman and Salt built stairways in an add-on inherited system. They formed the approach route to their houses. In the wadi all business and commerce centers are concentrated, in the down town area. In Amman, however, ministries and administrative departments are scattered on different jebels. Fig.(3-a,b).

The residential area on the top of the mountains lack shopping centers and social facilities. Each wadi is an actual gulf separates one neighbourhood from the other and hence all creates difficulties. People have to go to the down town area for shopping. They have to go through the downtown area for visiting the neighbourhood unit next to them. Therefore, to get from a point in the city center to the top of a jebel (a vertical distance of 100 ms), may entail a horizontal distance of 3 klms by road, as well as a gradient of (1:1, 1:2 or 1:3), and dangerous hair pin bends. Furthermore, all the traffic also has to pass through the city center along the narrow arteries. (Fig. 4).

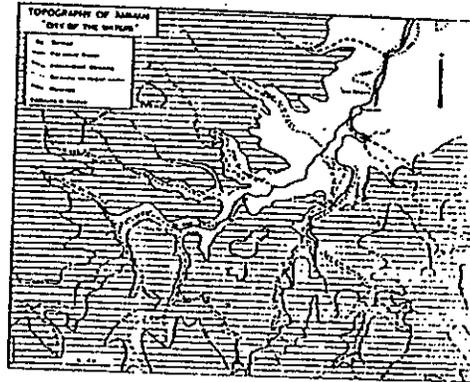
* Wadi means Valley.

* Jebel means Mountain.

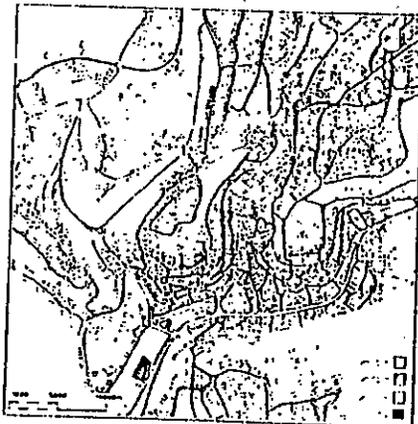
**Fig (1): Petra Stairway Engraved
In Rock.**



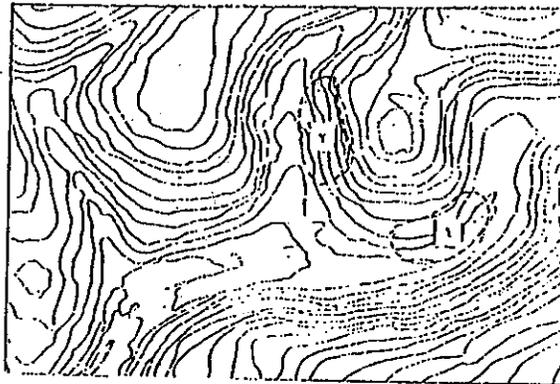
**Fig (2) (a): Amman and the
Rigid Control of Topography.**



**(b): Amman Series of Wadi
and Jabals.**



**Fig (3) (a): Salt-Series of Stairways
Formed the Approach
Routes to Houses**



**(b): Salt, Houses Spread Along
the Wadi and Accessible Slopes**

The topographical pattern in both cities has imposed the use of stairways as a unique spatial arrangement. This facilitates the inhabitants' movement; pedestrians going up to governmental institutions, or going up to their residences, or down to the downtown area for shopping, and or visiting relatives in the near neighbourhood, or traveling out of the city. Much energy is exerted to simply occupy the space. But they accomplish socially a productive work. Such spatial arrangement in the urban environment represents man-environment interaction. It is crucially linked with people's culture, and reflects a spatial organization that has functionally equivalent parts.

A stairways as a circulation system is successfully implemented in the Amman area not only because of its functional context, but also because of their economic and socio-cultural forces. A balanced interaction is created in the environment to provide notions of the kind of spaces which are socially and culturally defined, functionally and physically accepted and psychologically realized.

The Spatial Quality in the Merging Urban Fabric:

The natural unconscious evolution of the urban fabric in the cities of Amman and Salt is dictated by topography. Although, the site of the city of Amman with its relief varied, that every house of building if properly sited can have interesting outlook. It is an exciting challenge to any architect or planner. Topography is reinforcing the artificial design of the surrounding clustered houses and their arrangement. In such a complex layout, an exhaustible diversity of spatial quality is introduced. Therefore, the changing direction of stairway with the cluster, dictated by topography, imply a changing and irregular patterns of houses. A stairway is rarely straight, and leads inwards into the cluster and interpenetrates it. A stairway forms a route, where the climate along this route is cold in contrast with the exposed hot spaces in the other parts of the city. (Fig. 5). It acts as a collective memory



ate VIII The oldest part of Amman, 1958. Looking down on the market which lies along the banks of the stream behind Talal Street. This area is due for radical reconstruction under the Town Planning scheme.

Fig (4): Amman; the Oldes Part, the Down Town Area Along the Wadi.



Fig (5): Unique Spatial Arrangement in Amman and Salt.

for the society and as an expression of shared attitudes and common pattern of life.

The surrounding terraced houses in the cluster are of one or two floors high. They are small houses cluster around the lower slopes of the mountains (cones). They reflect the genuinity of a culture when seen in their historical and traditional context. They are simple repetitive components, and are complex but, they do have regular internal arrangements. They achieve considerable articulation of their organizational simple structures. This articulation emphasizes their identity over a range of a city size. (Fig. 6), (Fig. 7). These houses are; "Single buildings are conceived as part of an interlocking fabric never as isolated elements. The Urban fabric is made of the consistent repetition of a member of basic architectural typologies using local materials and simple methods of construction.

People living in these houses (Socially and culturally) need to maintain contact with their neighbours. To keep contact physically with the ground the Houses have terraced roofs, roof gradens and balconies. The topographical changing levels allow for small squares in the middle. These squares and stairway's flights are used by the inhabitant to sit, to watch the going on and to congregate. The inhabitants try to create their spatial environment and action in the place. Fig. (8),(9).

The access to these houses open directly to the stairway route. That stairway represents an enormous social communication to the inhabitants living in the houses around. Direct private doors open independently to the stairway. A stairway is a direct and a short access to public life and public streets in the down town area. But the inhabitants are cut off the public life in the city's commercial and business area.

A stairway, is an important element in its context. "It functions as a perfect system, that pedestrians use, and preserve the intimacy of the residential area. Stairways form an integral part of the circulation system in the city. They are built for the human use, to the human scale".

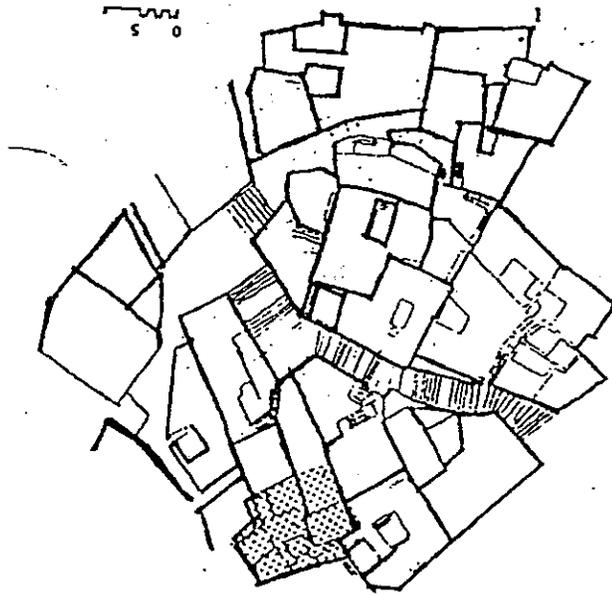


Fig (6): Al-Rommanat Houses Cluster-Salt.

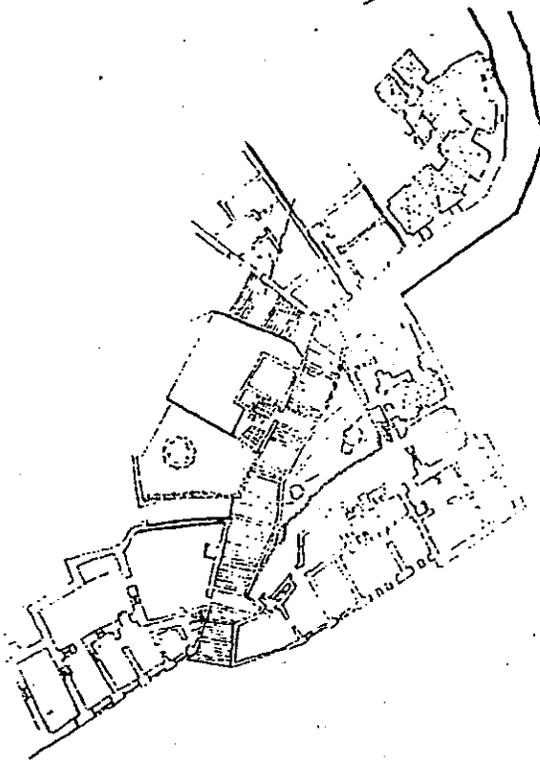


Fig (7): Al-Yamama Urban Fabric-Salt

The Changing Urban Fabric:

Nowaday, in contrast, we are faced with two extremes of interventions. The brutal new largescale developments that introduce an alien scale and alien functional requirements. There have been continuous changes in the city's urban structure in Jordan. The spatial patterns of life are breaking up to relief stress and strains in the social pattern. New measures of life style are introduced. Now, the whole character of Amman, Salt and almost every town and city has been changed.

Traffic receives primary consideration. That car becomes the scale in urban space. Streets' unity should regulate street together with houses and dwellings. A contemporary expression is adopted based on a new conception of life. Streets are bordered with residences and uniform rows of buildings. They suppose a continuous change of the city's growth. A situation of which LeCorbusier wrote; "Cities can be seen emerging from the jumble of their streets, striving towards straight lines and taking them as far as possible. A situation that Amman Salt and almost every city and town in Jordan is facing increasingly a traffic problem with the size of vehicles system as car ownership levels had build up beyond the point. (Table 1). Serious problems and effects began to become apparent.

Together with the growing urban population and the changing economical relations affected the spatial relationships between man the inhabitant and urban environment. This in turn lead to the eventual death of the traditional urban fabric in the city. No more stairways were necessary.

The cognition of the down town area, dispersed most of its key elements to the peripheries (out of town sites). The new urban settlements need new regional highways to be more accessible. A newy generation of shopping and commerical centeres are being designed and implemented. The new merging developed urban pattern in Amman (the capital of Jordan) is clearly anticipate

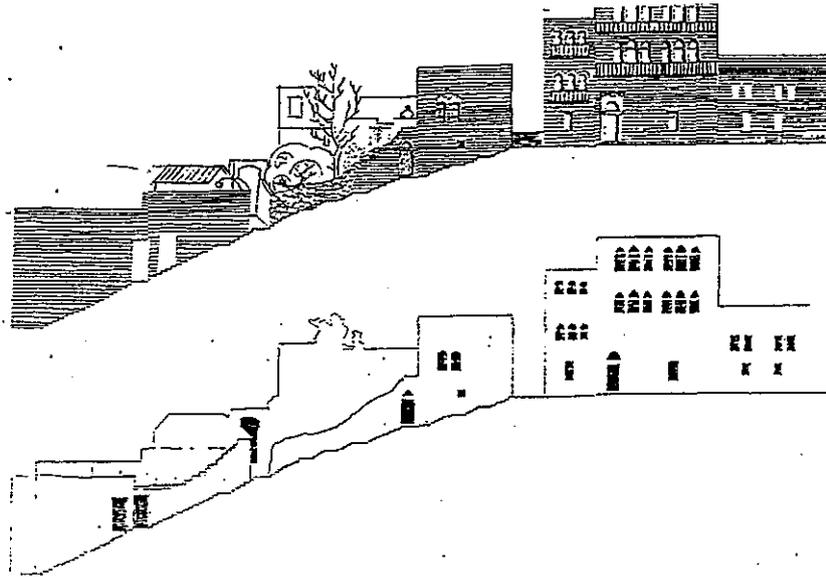


Fig (8): Direct Private Doors Open to the Stairway Route

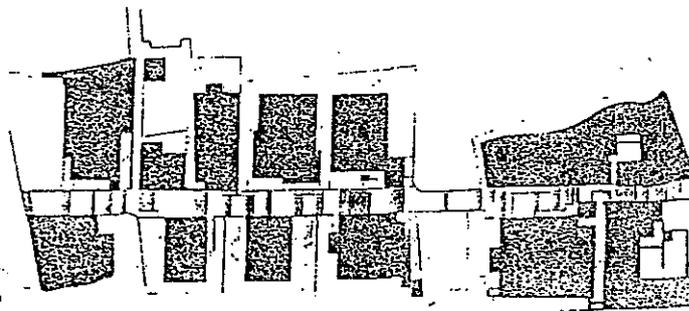


Fig (9): Simple Terraced Houses Around the Stairway.

Year	No. Veh.	No. Pop. X1000	Veh./100 Pop.
1970	21970	1508.80	1.50
1975	47233	1810.80	2.60
1980	135308	2218.30	6.10
1985	221454	2693.10	8.20
1990	252812	3236.90	7.80
1992	276461	4000.00	6.90

Table (1): Vehicles and Population in Jordan

vehicular traffic and infra structure networks. New ideas are implemented; tunnels for pedestrian, cloverleaves inter-sections and ...etc. The movement at path-street consists of dual grid integrates vehicles and pedestrian circulation. Three big multi-floor carparks are built to relief the parking problem in the downtown area of Amman. The new provided structural framework articulates the urban space into small identifiable groupings of streets and buildings. M. Serageldin observed that situation and she writes, "Streets are delineating the hierarchy of social spaces in the country. Alignment and access are related to major elements rather than to site conditions for vehicular access is nowadays mandatory. (Fig.10), (Fig. 11). so, most of the governmental expenditure, is to improve and provide better accessibility for vehicular users.

Psychological and Visual Perception:

It is well understood that, "All stairs impose certain gait and hence, a definite psychological orientation on man the user"(11). Few researches have been carried out to examine the sense of comfort or strain, safety or danger that the user experiences in climbing and as descending a particular kind of stairway. It is found that the physiological factor is more or less constant, but the cultural factor is variable. This is well understood by architects that; "The stairway plays an important role in the required ceremonial behaviour of both climbers and beholders"(12).

Every house is supposed to have an interesting outlook. The cluster of houses surrounding the stairway is related to the most compatible topographic feature. The sloping site affords the inhabitants great interest in view. The view of the city of Amman and Salt, and their skylines are introduced to the houses, opened, enframed and focused on. The inhabitants as they are ascending or descending (The soft and wear with time steps) enjoy the view of the city. The changing degree of stairways termination determine the different possible relationships, where the sense of spatiality is still in tact. Inhabitants can realize the differences

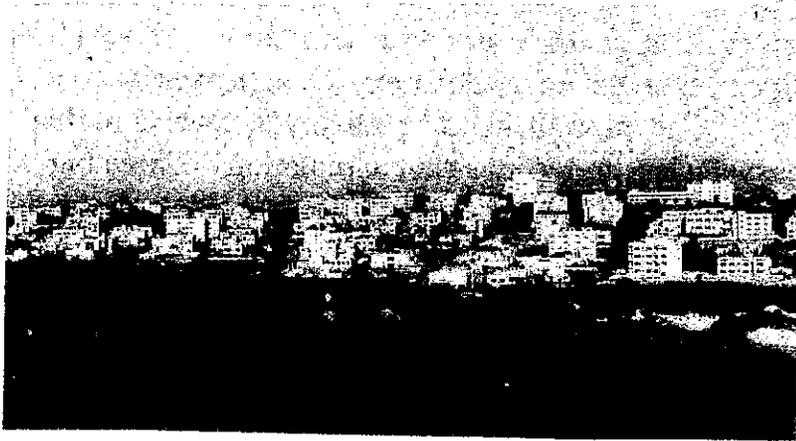


Fig (10): The New Urban Fabric in Amman - Jubbiha





**Fig (11): Stairway Route Moving Between
Houses and Shops - Jabal Amman**



Fig (12): Descending the Stairway - Determine Different Relationships.

and variables of the visual perception. It provides a variety of possible lines, movement and connections. A stairway route creates its spatial organism. It is a path that facilitates walking and cold to the touch of people sitting on them. People feel great and proud while ascending Descending enhances the feeling of rest and security. For the inhabitants, the visual field is far larger below.(13). They feel their place in the life of the city. (Fig. 12), (Fig. 13), (Fig. 14).

Today, stairways are visually intercepted. They are used for commercial signs and displayed good. A variety of stairways are built. They are different in length, bending and slope. Some are short and simple. (Fig. 15) Electrical wiring, light posts and telephone cables add visual difficulties to people using stairways. The bending indirect approached to these stairways from the down town area (market place), form nodes and connecting points. The meeting flights of different directions and the created small squares make them more generous and more appropriate.

Stairway Material and Construction:

Stairways in the traditional urban structure are built in well shaped and dressed stones for the riser and tread. Some are built in a ramped stairway. The inner depth of the tread is paved with squared or rubble stone tiles. Dimensions are varied, but go with the sense of comfort, safety and suitability to human dimension.

Today, stairways are partially or completely demolished, removed or replaced with concrete. It is the new material used for forming steps and landing. Project's implementation for drainage system, water sewage system and electrical cables and wiring have created difficulties for people using these stairways. Landings and floor files are removed and man-holes are in the place. They are badly maintained. Fig. (14).

The surrounding houses are built of limestone. Well shaped and cutted in white yellowish dressed stones are used in building these houses. Which are propectolls for development. and most

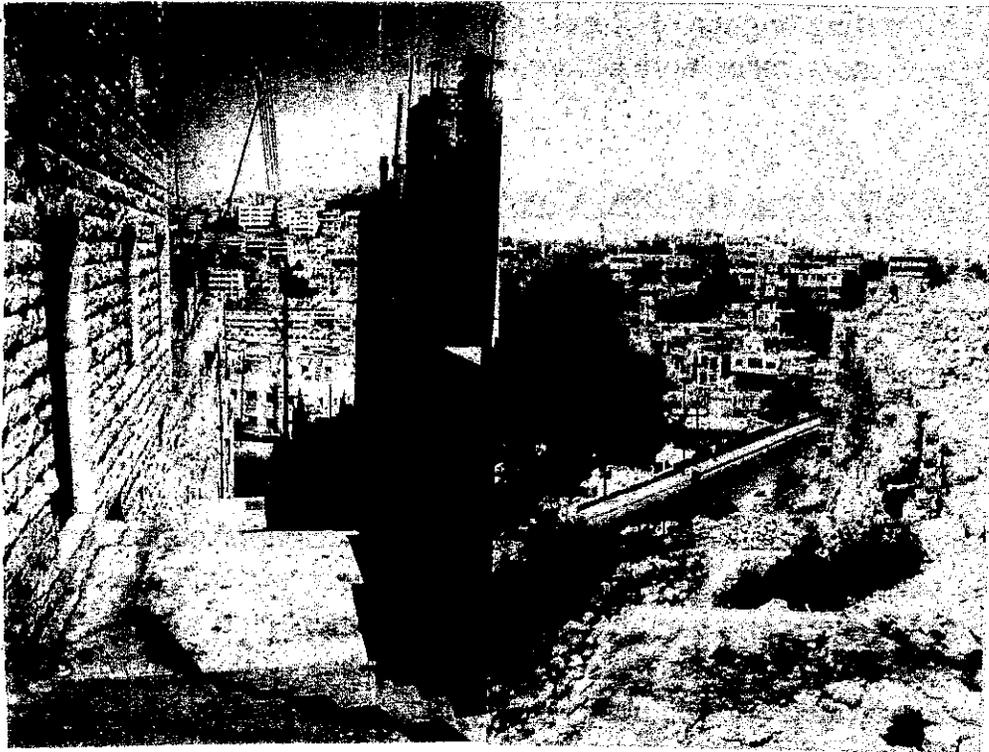
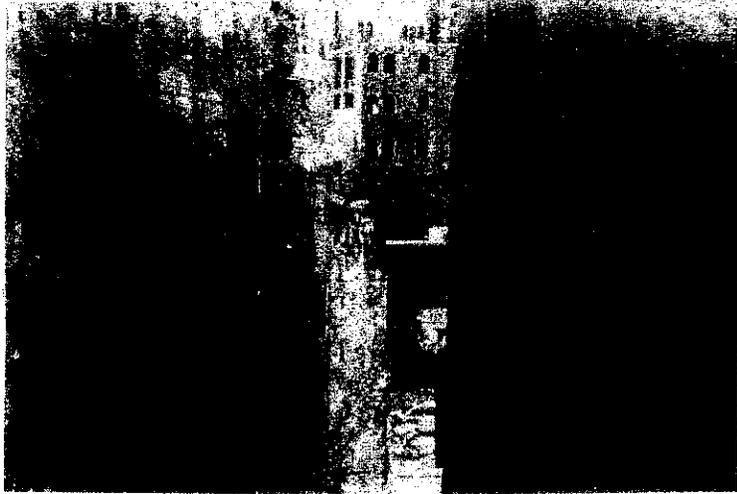


Fig (13): The View of the
City From Stairways

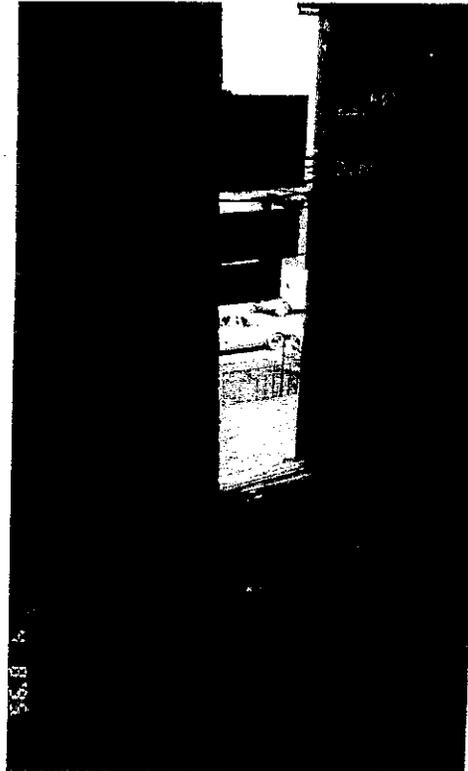


Fig (14): Al-Kallia - Stairway - Amman City Centre
Showing Different Relationships.



**Fig (15): Commercial Signs and Goods
Display Al-Hashimi Street.**

of which are not well maintained. The historical-Qala' Amman stairway's stones are removed and taken away, Fig. (16) that stairs are disappearing and the stairway has changed into a ramp. Some are already disappearing. The new additions, expansions as repairs are done in different materials and technology. Some of these houses are not used any more for residences. They are shops stores or workshops. As for those houses close to the city centre are waiting destruction and new high rise building stand in place. Fig.(17) and fig.(18).

Efforts are aroused to renovate or rehabilitate these houses. The work is slow and difficult, and funding is not available.

Conclusions and Recommendation:

These stairway survived the passage of time. They constitute resolutions for urban problem intellectually and possess a powerful sense of process. Cities in Jordan like Amman, Salt, Karak and ... etc., seem to have grown organically with people's culture. They suggest a different type of formation limited to the inhabitants' vernacular culture, in which they are recognized as communal rich structures solutions. From the most modest of individual parts, the most spectacular results. (13) Such particular elements locate particular designs in particular environment. The spatial revival use of traditional and cultural experiences of the inhabitants explain the importance at the study of the aspects of environmental quality. Research and committees are not enough in themselves. They must be supported financially and socially. They must be backed by vision and general understanding of the course of development today, that cities and towns in Jordan must take. To consider the past its merits as reference, balanced against the present and its requirements. They also have to promote what may be appropriate for the future.



Fig (16): Al-Qala' Stairway-Amman
Steps Stones are Taken Away.

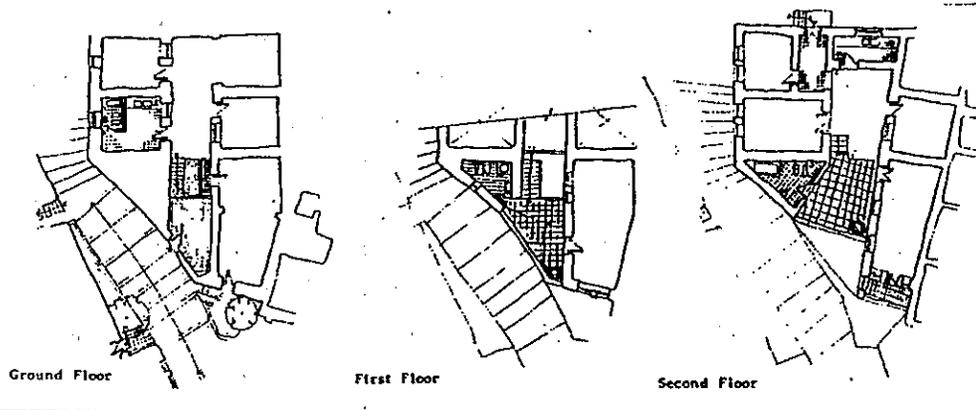
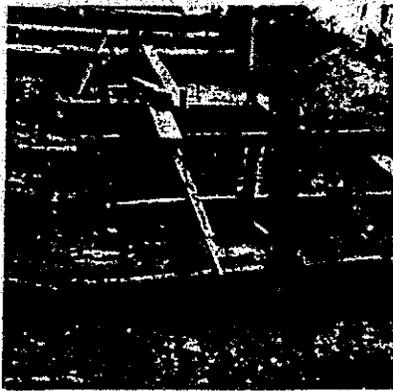


Fig (17): Plans are Done and Efforts Aroused for Renovation.



**Fig (13): They are Badly Maintained: Stairways
and Houses Around.**

REFERENCES:

- 1] S. Giedion, "Space, Time and Architecture", Harvard University Press, Mass. 1978.
- 2] C. Norberg-Schultz; "Meaning in Western Architecture", Studio Vista Book, 1980.
- [3] S. Giedion, Ibid. (1).
- 4] J.M. Hacker, "Modern Amman", A Social Study, Research Paper Series No.3, 1960 University of Durham.
- 5] S. Piano; "Traditional Moslem Cities and Western Planning Ideology, and outline structure conflicts", The Arab City Symposium, Serageldin and Sadek, Al- MдинаAl opawara, 1982.
- 6] C. Alexander and Others; "Pattern Language", Oxford University Press, New York, 1977.
- 7] Le Corbusier, "The City of Tomorrow", Architectural Press, London, 1971.
- 8] S. Al-Faqui; "Urban Cultural Revival in Amman: a city in transition", The Scientific Magazine, Arab University of Beirut, Dept. of Architecture. Vol. 8, 1995.
- 9] M. Serageldin; "New Popular Housing in the Middle East", Architecture and Identity Agakhan Award for Architecture 1983.
- 10] S. Owens, "Energy Planning and Urban Form", Pion Ltd., London, 1986.
- 11] J. Marston and Others; "Dimension of Stairs", "Scientific America", No. 273, Sep. 1974, P. 82.

[12] S. Giedion; *ibid* (1).

13] D. Gosling & B. Maitland; "Concepts of Urban Design", St. artins Press, New York 1984.

- The Statistical Yearbook, Department of Statistics,
Amman, No.44, 1994.

- The Roval Scientific Society, *Building Research Cent.*
"Architectural Heritage in the Hashemite Kingdom of
Jordan. Al-Salt", 1990.