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## ANALYSIS OF SPATIAL STRUCTURE AND SOCIAL SIGNIFICANCE OF A SAMPLE OF HAMMĀMS IN MEDITERRANEAN CITIES

**Roula Aboukhater**

### Abstract

*The hammām is a public building which is traditionally closely linked to socio cultural norms of the society that is supposed to serve. This paper seeks to answer questions about the logic by which such buildings respond to those complex socio cultural relations and the potentials offered by their spatial structures. The hypothesis in analyzing the internal layout is based on the ability of forms to adapt to socio cultural norms of certain societies and that they could be shaped to respond to social needs and to produce appropriate behavior. This study is based on the analysis of the morphological characteristics of the internal layouts of several hammāms, the socio-historical information, the direct observation of the spaces and face to face interviews with staff especially those working in hammām Ammuna in Damascus. The main objective is to explore the following questions: 1) How are hammāms "designed" to fulfill users' social needs and their well-being in the internal spaces? 2) How architectural settings in the internal spaces of the hammām are "coded" or "structured" to produce appropriate social practice or behavior? This paper demonstrates that hammāms are the witnesses of a genius locus of adaptation of a building to socio-cultural norms.*

### Keywords:

Traditional architecture, public bath, well-being, users' needs, socio-cultural norms, spatial layout.

### Introduction

During the HAMMAM Project (HAMMAM, Hammām Aspects and Multidisciplinary Methods of Analysis in Mediterranean Region) the author had the opportunity to visit and study several examples of hammāms in Islamic Mediterranean Cities in order to explore the spatial functional structure underlying an apparent diversity in the organization of such traditional buildings. Investigations were carried out in order to check whether these building express a single "bathing space" culture, or in different terms whether they express a specific type of building that has spread over a wide region and through different periods.

Vernacular buildings have certain characteristics that can be summarized as follows: they are fully integrated to their context and they respect the environment either the natural or the socio-cultural one. They are the most significant expression of the common values of a society and the result of a certain vision of the world and a defined model of life (Rapoport, 1972). They clearly reflect values that are admitted by the society and transmitted from generation to

generation.

The form of traditional buildings is determined by several socio-cultural factors which could be considered as primary forces, whereas physical aspects are mostly generator of variants and could be considered as changing factors (Rapoport, 1972). The form of a building could hardly been understood outside the environment, the culture or the way of life of the society where it is built.

In traditional architecture we may find differences and variations, but they all integer a system and general order or a common vocabulary that is well known to the people living in a similar culture, and these norms are usually transmitted from generation to generation. These variations are adapted to answer to a common culture or a common functioning system.

### Hypothesis and Objective

The Islamic public bath or hammām, is a building type that is found in almost all over the Mediterranean region. It is considered as a cultural heritage building and one of the meaningful examples of Islamic architecture. Most plans of hammāms present certain similarities through different periods, which are due to similar functional requirements (Pauty, 1933), with little variations from one country to another.

The hammām is a public building that is traditionally constructed with close links to its urban context and to socio-cultural norms of the society within which it operates. This paper seeks to answer questions about the logic by which such buildings respond to those complex

relations and the potentials offered by their spatial structure.

The hypothesis behind the analysis of the internal layout is based on the ability of forms to adapt to socio-cultural norms of a certain society and the way they are traditionally shaped to respond to local social needs.

The study is based mainly on the spatial analysis of case study hammāms from different eras and countries and will not seek to develop an understanding of how these buildings evolved chronologically. The study is based on socio-historical information, direct observation of the use of the hammām's spaces and on interviews with staff especially those working in hammām Ammuna in Damascus . The main findings are based on morphological analyses of plans of different hammāms. Examples were chosen mainly in Damascus in the eastern part of the Arab world (Mashreq) and in Fez in the western part (Maghreb). The main aim of this paper is to highlight some general aspects in order to understand the social forces that generate the internal layout, and does not rely on statistical analyses of data.

### Forms and Norms

In any building, or architectural project there are two active human entities that interact with spaces, the physical body with its basic needs, dimension, requirements for comfort etc... and the social hidden body with all its psychological and socio-cultural needs that may differ from one society to another and from one period of time to another. The social body has to do with all the norms and codes that are defined or considered by the society, while moving in

the street, using a public facility, interacting with neighbors, etc.... And in the Islamic or the Arab world these codes may become strict laws that govern the behavior of people (Lou'aiby, 2007).

The social body requires a certain environment that should be designed to promote psychological and social well-being that go along with these codes, such as having the opportunity to move from one place to another if needed, to interact with others or to have privacy, to feel secure and safe, to be in an interesting environment with aesthetic attributes, and many other conditions that permit to the soul as well to the body to feel in harmony with the world and the physical environment.

Research on the interrelations and double link between forms and behaviors seeks to answer questions about the mechanisms and rules by which buildings are constructed to fulfill social needs. The potentials and the physical characteristics of spaces that are defined by their spatial structure give people different options of use and in some cases they could force some social behaviors. In this regards, we could explain some psychological acts, behaviors or emotions by looking outward at the physical surrounding.

### Architecture and Experience of Well-being in the Hammām

The hammām is conceived or built to fulfill specific conditions of climatic comfort that consist of proceeding from cold to warm rooms and then to hot room in smooth graduation of temperature. The sequence of spaces is maintained in all examples of hammāms in

Mediterranean countries.

The construction and structure of the building are conceived starting from the interior towards the outside, the research for balance is clear in the way the first room or the reception/undressing room is adjusted in relation to the bathing spaces. We can find this regular and harmonious layout inside the religious buildings and even in traditional houses in Islamic cities. The hammām space with its specific architectural design is characterized mainly by using domes for the roof with apertures to allow lighting into the inner rooms. The ornamental aspect consists mainly of using squinches, pendentives and muqarnas in the base of domes and in corners. The fountain in the reception hall or in the bathing spaces contributes to the whole visual scenery through the sound of water murmuring in the basins. All of the above characteristics contribute to the aesthetics integrity of the spaces and to creating a relaxing environment that could engender a sense of harmony with the cosmos through the dome as the sky and its star shaped openings. These give users the opportunity for relaxation and psychological restoration.

The hammām is a place for ceremonies such as celebrations after child birth, before marriage, etc... It is a place where rituals and traditions are respected and transmitted from one generation to another. These rituals of use and celebration are still alive today and are an expression of unity with the past and its history. These rituals contribute to having a sense of a collective meaning and cultural identity.

The experience of the hammām with its physical attributes such as its volumes, lights, sounds, interrelation between spaces, and its spiritual

attributes such as symbols, rituals etc provides a unique experience and supports the fulfillment of well-being needs.

### Spatial Analysis and Social Significance

Some of the social needs that are linked to the use of the hammām and its architectural configuration are examined in this section.

The different parts that constitute a building, as rooms, halls, etc... have shapes that influence perception and visibility which engender a variety of psychological responses. The surrounding visible spaces play a role in people's interaction with the environment as ease of orientation, sense of privacy, engagement and integration, social interaction, segregation... The physical characteristics of the hammām are examined in order to show how these enable some emotions and/or behaviors that are an integral part of the cultural experience of taking a bath in a hammām in an Islamic society.

Spatial analyses help in understanding how the form of the building could encourage or prohibit some behaviors, through studying the movement and interrelation between spaces, visibility inside the building and dimension of the inner cells that constitute the whole building. The analysis will focus on exploring the social significance of the spatial structure and how it has been adapted to respond to social rules such as privacy, control and social interaction.

### Social needs and hammām use

The social structure of a space or what Hillier and Hanson call it "the social logic of space", is not visible and is difficult to reveal only by studying the physical layout without any deeper understanding of the space use patterns, the

culture and the social codes of the society (Dovey, 1999).

#### a. Privacy - Segregation

The hammām is not only a place for cleaning but it is also a semi-public space that allows people to socialize and at the same time it offers a suitable environment that conforms to socio-cultural norms of the society in Islamic countries. The religion in this case is related to social norms about "respecting privacy and seeking permission to enter others' private domains. This is an obligation and a right accorded to all persons" (Farah, 2001: 42.2).

The hammām is used by women and men separately, which permit the sense of privacy and gender division that are highly recommended in Islamic society. It is one of the rare public meeting places for women in the Islamic context, and from its primary architectural concept it admits segregated rules, which are materialized either by constructing separate building for each gender, forming twin hammām-s which are found mainly in Turkey, or by using the same structure in different times. During the women bathing session, the entrance of the hammām is protected by an additional barrier which consists of a curtain hung in front of the main door, a sign well known by the local people who are familiar with this tradition. Furthermore, the curtain provides an additional layer of protection of the inner spaces of the hammām from the outside.

The hammām consists of two main domains, reception zone and bathing zone. The reception zone consists of an open space with iwān-s in most cases; it serves multiple functions (undressing, eating, relaxing, communication, etc...). It is the least private territory of the users

and the least private area of the bath in relation to the outside.

The bathing zone is the main space where sweating, scrubbing and washing take place, and in some cases other functions such as massage or beauty treatment are also carried out. In most cases, the bathing spaces contain some enclosed spaces that allow for private washing to take place.

### b. Control and Movement

The workers in the hammām operate under a hierarchical structure. There are several workers for each job, and every task has its rituals and traditions. The client is the object, who passes from one hammām attendant to another, has to respect the sequence of treatment that has been requested when entering the bathing spaces (Kayyal, 1986). The hammām is used by different classes of people and sometimes by non Muslims. The hammām attendants sometime organize the bathing to allow a certain level of homogeneity between clients. They can control the access to the hammām even from the outside, as they control the access based on their judgment of the client by giving some reasons such as “the hammām is now reserved”, or “the hammām is closed for cleaning.”

Inside the hammām, they also try to ensure the right mix of clients especially in the bathing spaces. They decide who enters and in what time according to the clients already using the bathing area. The scrubber stays inside the bathing spaces all the time, other workers move between spaces to control the behavior of clients or to solve any problems, but all this procedures of control happen with a certain

level of politeness and hospitality (information collected from interviews with the staff of hammām Ammuna in Damascus – in April 2008).

### c. Social Interaction

The reception/changing area of the hammām is mainly used for relaxation and for festivities while celebrating ceremonies. Socialization takes place mostly in this part of the hammām. It is a meeting place for sociability where informal interactions or spontaneous social encounters happen. It is an important element in almost all of the Damascene hammāms. The changing area in some hammāms of Damascus occupies almost the same floor area as all the bathing spaces together. In Fez it is less important due to a different culture of bathing in the Moroccan society where the changing area has lesser social role as compared to that of the hammāms-in Damascus and in the eastern part of the Arab world.

## Findings and Discussion

This section illustrates how the spatial structure of the internal spaces of the hammām responds to the previous explained social needs for privacy, control and social interaction. The following aspects are explored: the depth structure, the visibility, and distance which have an influence on users' behaviour.

First by using basic concepts of Space Syntax, based on the methods of space syntax developed by Hillier and Hanson in 1984 which focuses on the topological connectivity of pieces or “subspaces” within places a number of justified graphs are produced using a technique of mapping the building into a cellular structure

using the external entry as a base (Dovey, 1999:21). This technique helps in showing the connections between spaces or subspaces which could reveal some characteristics of the spatial structure such as depth structure and control value, as it is explained here after:

“Depth structure” and “steps”: express the shallowness or the depth of a cell from the outside. While we penetrate into the building we cross many boundaries.

The control value is a property of the degree to which a space “controls” its neighboring spaces. (Farah, 2001: 42.8)

The diagrams resulted from this method are not plans; they are designed to explore the mode of access, degree of depth and control in the inner space of the hammām.

Three types of structure of movement and relation between spaces could be identified in general in this type of analysis (Dovey, 1999:21-22).

Linear: sequence of spatial cells with no choice of passing from one cell to another. The result is very strong control in all cells except the deepest.

Looped structure: connection of cells in a network with multiple choices of pathways. The result is many possible pathways which permit diverse encounters and cells are loosely controlled.

Fan shaped or branching structure (tree) permits control access to a range of spaces from a single cell.

Two examples (Figure 1 & 2) were chosen to identify the type of structures that we could find in the hammām. The diagrams help in understanding the main characteristics and spatial properties that correspond to some social needs and in respect with the way the hammām is used.

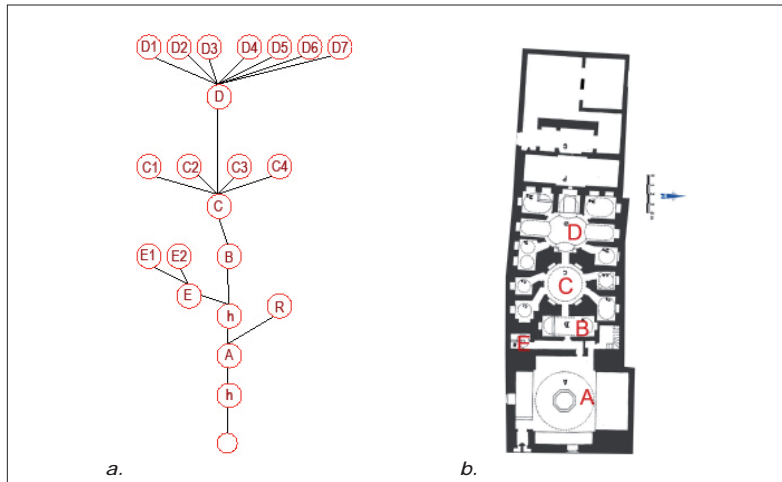


Figure 1: Justified Graph and Plan of Hammām al-Tairuzi in Damascus (Source: Author).

a.  
h: hall – R: stairs up – E: Toilet hall –  
B: 1st bathing area – C: 2nd  
bathing area D: 3rd bathing area.

b.  
Plan of Hammām al-Tairuzi:  
Source: Ecochard, 1942-1943.

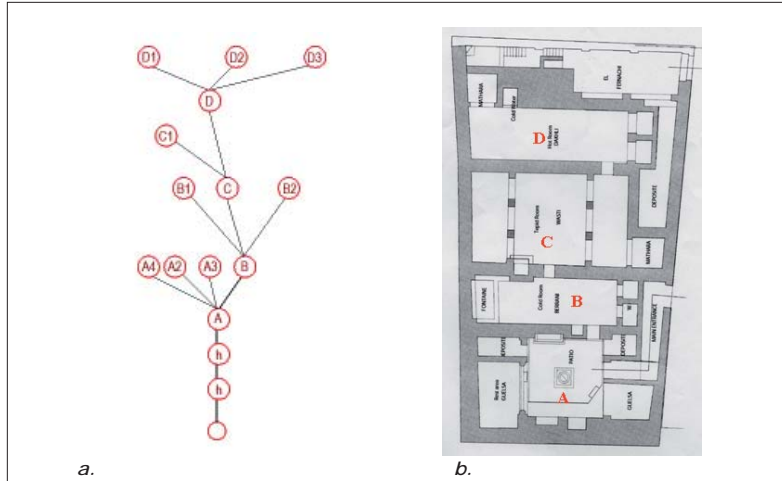


Figure 2: Justified Graph and Plan of Hammām Makhfiyah in Fez (Source: Author).

a.  
h: hall – R: stairs up – E: Toilet hall –  
B: 1st bathing area – C: 2nd  
bathing area D: 3rd bathing area

Plan of Hammām Makhfiyah  
(Source: Document by ADER-Fès,  
November 2006).

The three main structures identify a range of properties:

1- Linear structure found in almost all hammām-s (Ecochard, 1942-1943) & (Heddouchi, 1994-1995):

- The progression inside the hammām follows a linear disposition (Figure 3); we have sequential relationship from the street (from outside to inside and from public to private or semi private). The private cells are normally at the end of the line which permits privacy and less interaction with other spaces.

- Transition control of movement between spaces for a climatic reason, following the obligation to pass from one space to another gradually with a temperature that is higher or lower while entering or going out.

2- Ringy or looped structure doesn't exist in any hammām: in this case there is no control which is

contradictory with the essential principle of the hammām which is based on climatic control for gradual transition and on social control by staff and users also indirectly.

3- Fan or branching structure (in subspaces) found especially in internal bathing area with private bathing cells or maqsūras. This structure is generally dominated by the staff control (See Figure 3).

Through analyzing the diagram and in accordance to the bathing process in the hammām we can identify three types of relations:

- Public/Users (users in multifunctional area or the reception area).

- Less control from outside – double barrier at women session – entering could be controlled by workers. Layout permits interaction.

- Users/Users (in bathing area).

- Controlled by workers, deciding who and



when to enter. Governed by respect to socio-cultural norm that is managed by architectural features.

- Private – Family (private bathing cells)
- More control by users and workers – Protected from being seen.

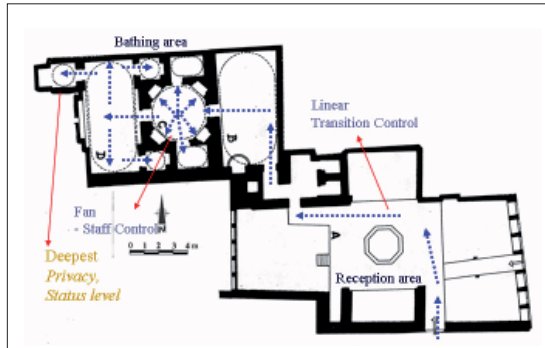


Figure 3: Linear and Fan Shaped Sstructure in Hammām el-Jaid in Damascus – (Source: Ecochard 1924-1943, with author's contribution).

The spatial structure and the representation operate in an integrated manner. Semantic relations are related to how spatial segments are named and given meaning, which correspond in our case with the depth structure. Names of spaces in the Islamic bath are mainly related to gradual penetration from outside to the inside which corresponds to passing from public to semi-public or semi private space. The halls in Roman bath are named according to the degree of heating, frigidarium, tepidarium and caldarium. Here after are the names of space in different Mediterranean cities in Arabic and translated to English:

From outside to inside

- Barrānī, westānī awal, westānī, Jūwānī (Damascus)

External, first middle part, middle part, internal part.

- Mashlah, Barrānī, wastī, dakhili (Fez)  
Undressing room, external part, middle part, internal part.

- Mashlah, Beīt awal, beīt el-Harāra (Cairo).  
Undressing room, first house, house of heat

We can see how they correspond with the depth structure of the hammām, and even in the case of Cairo, using (beīt = house) indicate also a sense of inner or private part for the parts that are far from the entrance. Other nominations indicate meanings of privacy or importance of social status such as:

- maqṣūra – qaser (Damascus)  
Small palace - palace
- Khelwa (Cairo)

A space where one can be alone

The hammām permits to have some privacy by using the khelwass or maqṣūras-. Normally maqṣūra means “small palace” and that is because usually rich people reserve these private spaces for their use only, and they may reserve the whole hammām. Other meaning could be derived from the word “qasar” in Arabic which means “restricted to”, as it is restricted for use for people who want to have some privacy. These private bathing spaces have no doors, because in the same time higher levels of privatization may increase levels of “uncontrolled behavior”, and this is a great problem in places related to the body such as hammām-s, which were always attacked by bad reputation.

The maqṣūra- are generally in the deep parts of the hammām, the deepest maqṣūra is usually

called in Damascus "maqsūrat al-mu'alem", or the cell where the best scrubber works in the hammām (see Figure 3). In Fez, the deepest maqsūra which has the long distance far from the entry of the deepest part (dakhili) is usually the place reserved for the Saint of the hammām where traditionally candles are lit (Figure 4).

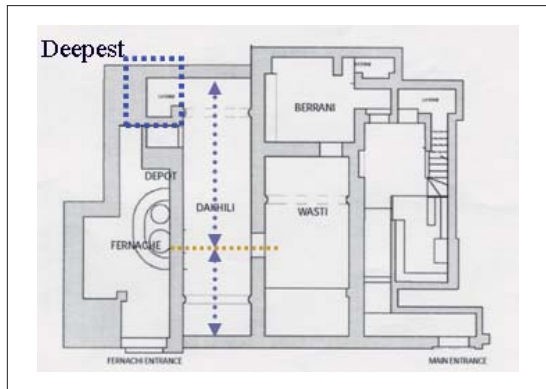


Figure 4: The Distance of the Deepest maqsūra from the Entrance in Hammām Bousweifa in Fez. (Source: Document by ADER-Fes, November 2006, with author's contribution).

Traditionally in the Arab world the deepest part of a hall and the most far from the entrance is always reserved for those of high social status, this norm is transmitted from generation to generation, and till our time the main guest is always invited to sit deep in the hall. The depth indicates the status of the guest (Dovey, 1999). In the reception hall of the hammām in Egypt, clients of high social level sit in the deepest part, never near the entrance door, and on a higher sitting place or mastaba than the others, and if the high mastaba is not vacant they add mattress in order to have a higher place (Lane, 1860).

Privacy, non-interference or interactions are determined by possibility to see or being seen. Layout influences visual access (barrier or angle), a wall could prevent from walking or seeing in a particular direction. After the exterior door of the hammām, the entrance space is usually indirect and has L shape, or a wall in front of the door is built to protect inside the hammām from "outside eyes". The maqsūra-s are also arranged to prevent seeing inside for people moving near these spaces (Figure 5 & 6).

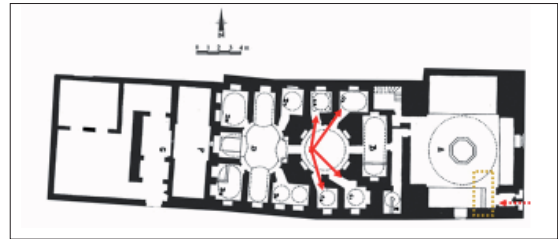


Figure 5: Visual Protection of the Inner spaces in Hammām el-Tairouzi in Damascus. (Source: Ecochard 1942-1943, with author's contribution).

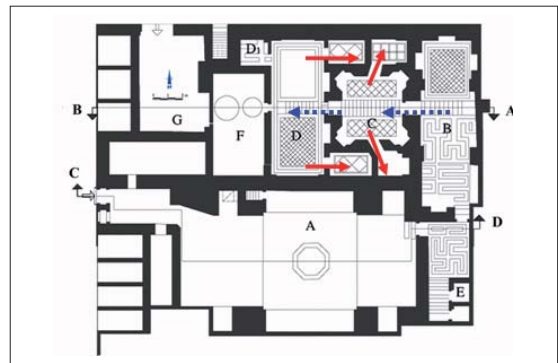


Figure 6: Visual Protection of maqsūra-s in Hammām Nour el-Din in Damascus. (Source: Ecochard 1942-1943, with author's contribution).

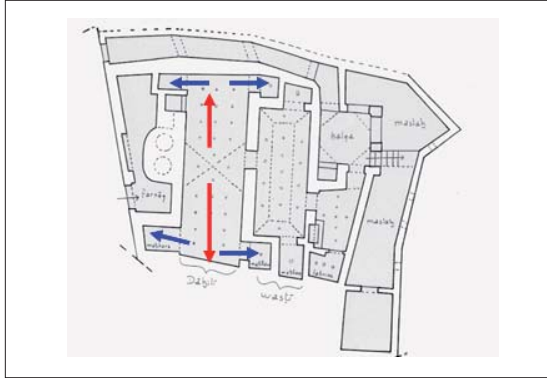


Figure 7: Distribution of maqsūra-s in the Deepest Part in Hammām al-Faqih in Fez. (Source: Heddouchi 1994-1995, with author's contribution).

The bathing spaces in most of the Damascus hammāms have a central part with corner niches. The central part has usually an octagonal shape, whereas the maqsūras are distributed between the two sides and the corners (Figure 8). Even when the main bathing hall is of a rectangular shape, there are usually alcoves where washing basins of water are placed and collecting water from taps placed in the wall. Clients carry out their washing while facing the basin and the wall or sit at an angle in relation to their neighbors. The distance between basins permits a certain "personal distance" that permits a certain degree of privacy by ignoring others or by turning their back or side. In the same time it offers the ability to regulate the degree of social interaction desired.

Users also contribute in changing the form, use and meanings of places. In Fez most bathing areas of the hammāms have a simple rectangular shape, with few private bathing cells, and almost no alcoves. So clients, especially

women try to define a private zone by defining their territory with a number of buckets of water placed in front of them, however, these do not provide visual privacy (Figure 9). Women move almost naked to fill their buckets with water as there are no washing basins in the bathing spaces of the hammām-s of Fez, the water is collected from a hot or cold water pools. This difference between Damascus and Fez may be because of very local differences between the two cultures, which are translated into different layouts and details.

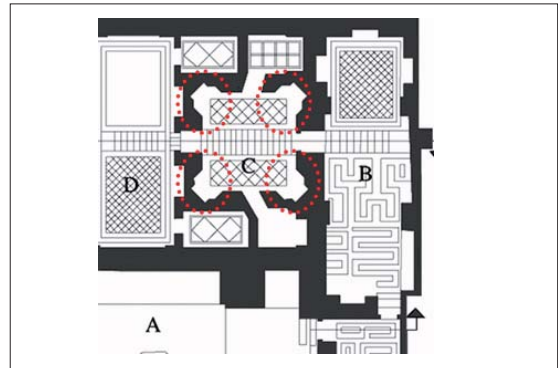


Figure 8: Alcoves in the Bathing Space in Hammām Nour el-din in Damascus. (Source: Ecochard 1942-1943, with author's contribution).

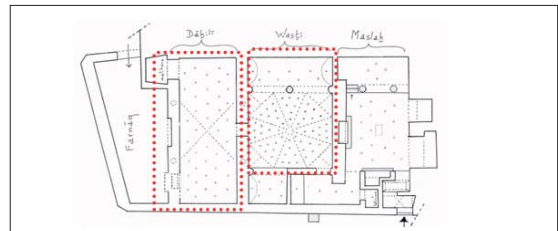


Figure 9: Bathing Space with Minimum of Niches in Hammām Ayn Allun in Fez. (Source: Heddouchi 1994-1995, with author's contribution).

The distance (from the building entrance) and dimension of a space have an impact on privacy and interaction. They could allow, facilitate or prevent various behavioral scenarios.

As mentioned before the hammām is a place of sociability, and the reception hall or the first part of the hammām usually provides the environment to facilitate interaction and communication. The open plan of this part that is not structured upon cells encourages free communications and interrelations. However, if the hall is very large and the sitting places are placed far apart this will impede the ability to hold a conversation. What we have found in the hammām-s of Damascus that small halls usually don't have deep iwāns, whereas large ones contain some degree of enclosure and segmentation that permit eye contact, through deep iwāns- which constitute a semi enclosed place facilitating spontaneous encounters and communications (Figure 10 & 11).

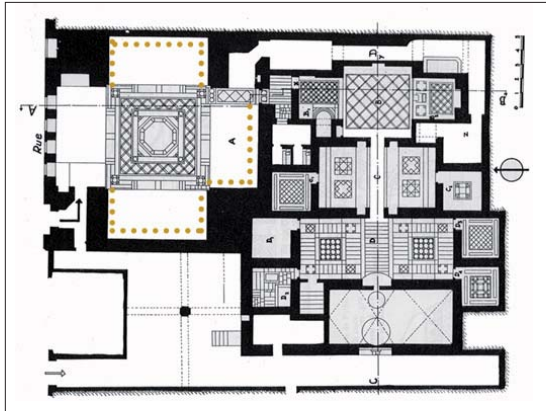


Figure 10: Large Reception Hall in Hammām al-kharab in Damascus. (Source: Ecochard 1942-1943, with author's contribution).

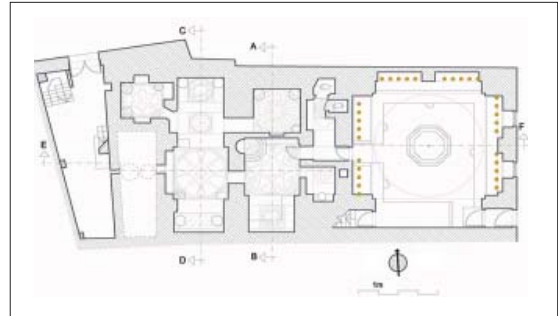


Figure 11: Small Reception Hall in Hammām Ammuna in Damascus. (Source: Survey IFPO 2005, with author's contribution).

## Conclusion

Most traditional societies have a common heritage and a common system of socio-cultural norms and order which is translated onto their living spaces reflecting their characters, traditions and identity

Traditional architecture is strongly connected to human life; this quality should be maintained in our modern cities and buildings. For this reason we should be conscious while carrying out works of restoration and rehabilitation. Some changes could be inadequate with social needs and norms of the society. The architecture of traditional public baths or hammām-s provides valuable lessons.

In this paper we have tried to analyze the physical properties of the spatial structure of the interior space of a sample of hammāms in Damascus and Fez according to the following criteria: movement, interrelation between spaces, visibility, depth and distance, in order to examine their responsiveness to social rules such

as privacy, control and social interaction.

The results of this study could be useful to the future design of new baths. They could help in developing guidelines for the rehabilitation of historical hammāms-, through highlighting the relationship between bath morphology and user satisfaction in terms of well-being and social needs. This is an exploratory study which opens the way to further investigations in terms of spatial syntactic analyses that could be undertaken in the future on a much wider sample of hammāms. Finally the research shows that the hammām is a masterpiece of traditional Islamic architecture and the evidence of a genius locus of adaptation of a building to socio-cultural norms and needs of the societies in Islamic Mediterranean Cities.

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