Architecture Planning
Built Environment Studies

An International Fully Refereed Journal
Published three times a year
http://www.archnet.org

Editor
Ashraf M. Salama

SPECIAL ISSUE ON TRADITIONAL PUBLIC BATHS-HAMMĀMS-IN THE MEDITERRANEAN
Guest Editor:
Magda Sibley

Copyright © 2008 Archnet-IJAR, Archnet, MIT- Massachusetts Institute of Technology

Archnet-IJAR is published and archived by ARCHNET, the most comprehensive online community for architects, planners, urban designers, interior designers, landscape architects, and scholars working in these fields, developed at the MIT School of Architecture and Planning in close cooperation with, and with the full support of The Aga Khan Trust for Culture, an agency of the Aga Khan Development Network.
International Journal of Architectural Research

Chief Editor
Ashraf M. Salama

Advisory Board
Attilio Petruccioli
Besim S. Hakim
Hashim Sarkis
Henry Sanoff
Jamel Akbar
Michael J. Crosbie
Mohamad Al-Asad
Nasser Rabbat
Nicholas Wilkinson
Nikos A. Salingaros
Peter Rowe
Suha Ozkan
William Mitchell

Architecture Planning
Built Environment Studies
An International Fully Refereed Journal
Published three times a year

Volume (2) - Issue (3) - November 2008

Copyright © 2008 Archnet-IJAR, MIT- Massachusetts Institute of Technology

All contributors granted Massachusetts Institute of Technology (“MIT”) worldwide rights and permission to reproduce, distribute, publicly display, and publicly perform the following Work in electronic format on the ArchNet Internet web site at URL http://archnet.org.

Views, opinions, and research results are the responsibility of the contributors. Images and figures are provided by the contributors.

SPECIAL ISSUE ON TRADITIONAL PUBLIC BATHS-HAMMĀMS-IN THE MEDITERRANEAN
Guest Editor:
Magda Sibley

Archnet-IJAR is edited by Ashraf M. Salama and is published and archived by ARCHNET, the most comprehensive online community for architects, planners, urban designers, interior designers, landscape architects, and scholars working in these fields, developed at the MIT School of Architecture and Planning in close cooperation with, and with the full support of The Aga Khan Trust for Culture, an agency of the Aga Khan Development Network.
Archnet International Journal of Architectural Research

Archnet-IJAR

ArchNet International Journal of Architectural Research – Archnet-IJAR is the first of its kind; an interdisciplinary comprehensive scholarly journal of architecture, planning, and built environment studies, that is blind reviewed and published on the World Wide Web three times a year.

Objectives
Archnet-IJAR objective is to establish a bridge between theory and practice in the fields of architectural and design research, and urban planning and built environment studies. It reports on the latest research findings and innovative approaches for creating responsive environments, with special focus on architecture and planning in developing countries.

Archnet-IJAR is truly international and aims at strengthening ties between scholars from different parts of the world with contributors and readers reaching across geography, boundaries, and cultures.

Archnet-IJAR articles come from architects, interior designers, planners, and landscape architects, and from those working in these fields in academic institutions, universities, research centers, government agencies, and private practice.

Reader
Archnet-IJAR addresses academics, practitioners, and students of architecture, planning, and interior design. It addresses those who are interested in developing their understanding and enhancing their knowledge about how environments are designed, created, and used in physical, social, cultural, economic, and aesthetic terms. Archnet-IJAR content keeps readers up-to-date on the latest ideas, designs, and developments in built environment related fields.

Archnet-JAR publishes research studies, criticisms and evaluation studies, and critical analyses about the creation, use, and evaluation of different types of environments at the macro and micro scales. The journal includes original empirical research papers, analytical case studies, and high quality position papers. Three major areas are covered by Archnet-IJAR:

Architectural and Design Research:
Topics include –but not limited to: architectural pedagogy and design studio teaching practices; architectural technology and sustainable design; design methods and architectural theories; design and project programming; environment-behavior studies; information technology; Islamic architecture; computer applications and virtual environments; post occupancy and facility performance evaluation; and social and cultural factors in design.

Urban and Built Environment Studies:
Topics include --but not limited to: administrative and political factors contributing to the shaping of communities, cities and urban regions, community planning; sustainable urban conservation; environmental planning and eco
development; housing policy, planning, and design; new urbanism; sustainable development; space syntax and GIS applications; and wayfinding and signage systems.

**Critical Essays on Architectural and Planning Projects:**
Essays that cover the above topics; critically discussing projects in use; after they have been designed, built and occupied. Articles are preferred to utilize the case study approach as a critical method in built environment research.

**Advisory and Editorial Boards**
The Chief Editor is in charge of developing journal issues, seeking out resources and articles, establishing publishing strategies, coordinating the review process, and posting each issue and its articles online. Archnet-IJAR has two boards; advisory and editorial. The range of expertise of the boards that include the panel of referees - academics and professionals- ensures high quality scholarly papers and allows for a comprehensive academic review of contributions that span wide spectrum of issues, methods, theoretical approaches, and professional practice.

**Submission Process**
Unlike other printed Journals where contributors wait for periods that reach two or three years for their work to get published, the value of Archnet-IJAR as an online journal is that it eliminates the large lead time needed for publication. However, submission, referee, and publishing processes are strict and adhere to the following procedures:

Interested contributors contact the chief editor expressing interest, and submitting a summary of their paper. One page will do.

The chief editor consults with the advisory and editorial board members according to their relevant expertise.

Soon after receiving feedback from the referees, author(s) are contacted to submit their full papers.

When full papers are received, they will be forwarded to two editorial board members for blind review, according to the referee form.

The chief editor contacts the author(s) with the referee form filled by the reviewers. While papers will be blind reviewed, in exceptional cases author(s) will be asked to communicate directly with the reviewers.

Author(s) revise their papers as noted by the reviewers and re-submit their work to the chief editor.

Author(s) should make sure that their submissions should be free of jargon, clear, simple and to the point.

Papers will be published in the next issue according to the following schedule:

March 30th (publishing date): December 15th (deadline to receive papers after reviews)
July 30th (publishing date): April 15th (deadline to receive papers after reviews)
November 30th (publishing date): August 15th (deadline to receive papers after reviews)

Interested reviewers and members of the advisory board may submit their work for publication in Archnet-IJAR. Their work will go
through the same blind review process and will follow the preceding procedures.

Notes to Contributors

1. Submission of Manuscripts
The language of the journal is English. All submissions will be online. One copy of the manuscript (in word document format) together with original figures and tables must be submitted to the editor: Ashraf Salama ijar@mit.edu
The name, mailing address, position, affiliation, telephone, fax, and email of each author must be supplied in a cover letter attached to an email. All papers will be blind reviewed and assessed by at least two referees.

2. Preparation of Manuscripts
   Layout
Manuscripts should be typed in double spacing on one side of A4 (21x29.7 cm) paper with reasonable margins (2.5 cm). All pages should be numbered consecutively.

   Title page (page 1)
The first page of the manuscript must contain a concise and informative title; names, affiliations and addresses (including e-mail) of all authors, and identify the corresponding author (who will be responsible for correspondence and reviewing proofs). An abbreviated title of less than 50 characters (including letters and spaces) should also be suggested.

   Title of paper, abstract and keywords (page 2)
Title of the paper should be written at the top of abstract without authors’ name. A concise and informative abstract must not exceed 300 words in length, should summarize the objective, methods and major findings of the paper. Keywords must be carefully selected to facilitate the readers’ search on Archnet Website, and should not exceed 5 key words.

Articles
Articles should not exceed 6000 words, including references.

Notes
Avoid the use of footnotes and endnotes, if unavoidable, label as (1), (2) and list all together at the end of the paper.

References
References in the text should give the surname of the author and the year of publication in brackets, for example, Rowe (1985) or (Rowe, 1985), followed by a, b,...when two or more references to work by one author are given for the same year. Page numbers should be given for quotes (Mitchell, 2003:33). At the end of the text the references should be listed in alphabetical order of authors’ names and in chronological order for each author. Initial and final page numbers of articles and papers should be given. The names of books and periodicals should be given in full, and the publisher and the city of publication should be given for books, conference proceedings, etc. Details of availability should be given for unpublished conference papers. Full references should also be given for legal judgments, bylaws and regulations, and government publications, etc. Examples of reference citation are given below.


3. Submission Process, Copyright, and Originality of Work

Proofs will be sent to the corresponding author for checking. Proofs should be returned within one week of receipt. Authors should correct typesetting errors only; they should not add any new material to the paper at proof stage.

Please read the submission process and procedures, and copyright notes under the general outline of the ARCHNET-IJAR.

All correspondence should be addressed to the chief editor.

Ashraf M. Salama
IJAR@MIT.EDU
Contents

Ashraf M. Salama

Editorial: Traditional Public Baths/Hammāms in the Mediterranean 10/16
Magda Sibley

The Hammām - A Living Cultural Heritage 17/28
Bettina Kolb and Heidi Dumreicher

Hammām Folklore Dynamics in Cairo: Lessons from Operation to Regeneration 28/41
Dalila El Kerdany

Monuments or Functioning Buildings: Legal Protection over Five Case-Study Historic Hammāms in the Mediterranean 42/55
Alaa El Habashi

The Architecture of the Hammāms of Fez, Morocco 56/68
Kamal Raftani and Hassan Radoine

The Reuse of a Hammām as a Public Services Centre--Hammām Suq El Ghezal; Towards a Sustainable Future 69/79
Samira Debache—Benzagouta

The Architecture of Public Baths of Tunisia: A Typological Analysis 80/92
Ines Bouraoui

The Surviving Historic Hammāms of the Medina of Tripoli - Libya: Tangible and Intangible Dimensions 93/108
Magda Sibley and Fodil Fadli

Analysis of Spatial Structure and Social Significance of a Sample of Hammāms in Mediterranean Cities 109/121
Roula Aboukhater
The Physical and Climatic Dimensions of the Mediterranean Hammāms

Jean Bouillot

An Inquiry into the Thermal, Acoustical, and Visual Aspects of Indoor Environment in Traditional Hammāms

Ardeshir Mahdavi and Kristina Orehounig

A Contemporary Hammām: Wellness Centre in Bodrum, Turkey

Ahmet İğdirligil

The Medina, the Hammām and the Future of Sustainability

Richard S. Levine, Michael T. Hughes, and Casey Ryan Mather

<table>
<thead>
<tr>
<th>Regular Papers (refereed- outside the scope of the special issue)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Creativity-Function Nexus; Creativity and Functional Attentiveness in Design Studio Teaching</td>
</tr>
<tr>
<td>Amira Elnokaly, Ahmed B. Elseragy, and Sarah Alsaadani</td>
</tr>
<tr>
<td>Intuition in Interior Design</td>
</tr>
<tr>
<td>Irina Solovyova</td>
</tr>
<tr>
<td>Outdoor Space Quality: Case Study of a University Campus Plaza</td>
</tr>
<tr>
<td>Dicle Aydin and Ummugulsum Ter</td>
</tr>
</tbody>
</table>

Copyright © 2008 Archnet-IJAR, MIT- Massachusetts Institute of Technology
While the efforts undertaken to invigorate the presence of Archnet-IJAR over the past two years have resulted in attracting a large body of readers, distinguished academics and scholars continue to show high interest in contributing their work to the journal.

In this 6th issue (volume 2 issue 3) Archnet-IJAR continues to raise imminent debate in architectural education and research. I am happy that there is a large demand on Archnet-IJAR. Currently, the journal has over forty papers in the review process. I am also delighted with the fruitful collaborative efforts not witnessed by any other leading journal in this field. Agreements are being developed between the journal and other scholars worldwide to guest edit special editions on pressing issues of interest to the global community. There is also another important collaborative initiative with IAPS (International Association for People–Environment Studies) to develop special editions based on its international biannual conferences.

In this issue a considerable effort has been put to present the readers—who have high expectation of Archnet-IJAR that is maintaining its presence as a distinguished platform for debating issues of interest to academics, professionals, and graduate students—a special issue on the Hammāms or traditional spas. Commonly known as “Turkish baths”, hammāms, or public bathhouses, were focal facilities in Islamic cities around the Mediterranean. Thus, this edition sheds the light on a long abundant topic that pertains to the fundamental role played by the hammāms in Islamic societies, not only in providing a washing facility for the demeanour of major ablutions necessary before praying, but also a venue for social interaction and rituals, marking religious celebrations and major events in the life of women in that epoch. Accordingly, I am pleased that Dr. Magda Sibley of the University of Liverpool has kindly agreed to contribute her work and that of her colleagues to the journal and to be the Guest Editor of this special issue on the hammāms. The contributions in documenting, cataloguing, and analyzing the surviving hammāms throughout the Mediterranean and understanding the way in which they are still functioning, used and perceived today by contemporary society are highly regarded.
The papers cover case studies that reflect the true essence of hammāms in the entire area of North Africa from Morocco to Egypt as well as others in Syria and Turkey. Concomitantly, I will leave the task of presenting the papers on the hammāms issue to Dr. Sibley. It is noted that due to limitation of time, several papers were not included in this issue. However, their authors were promised that the next issue of IJAR will include all accepted papers that have not had the chance of publication in this special issue.

In order not to exasperate the active scholars who have high interest and expectation of Archnet-IJAR journal and whose papers were accepted, a section that includes some of the accepted refereed papers is added in this special issue. This section starts with the paper of Amira Elnokaly, Ahmed B. Elseragy, and Sarah Alsaadani, followed by Irina Solovyova, and then Dicle Aydin and Ummugulsum Ter. Their contributions foster the journal scope based on the experiences offered from Egypt, United Kingdom, United States, and Turkey.

In their paper Creativity-Function Nexus, Elnokaly, Elseragy and Alsaadani raise the question of whether functional considerations in design hinder creativity within design outcomes. They map out creativity within design and whether it is always traced to a good idea or alternatively all good ideas result in creative design. They relate the continuous non linear process of review and modification, customary to traditional design-studio approaches, to the final products students submit as part of their design-studio applications. They question the role of juries or crits in the perception and understanding of architecture students and whether this traditional aspect of design-studio education justly provides architectural students with the constructive criticism they need amid feelings of tension and limited time constraints. They exploit a case study to explore their argument in a broader sense.

The paper of Irina Solovyova argues for bringing intuitive decision making back into interior design process as a legitimate design tactic. She argues that despite the fact that many decisions taken in space design are reached intuitively architecture educators still prohibit students from relying on their intuition and require solutions based on pure reasoning and rational thinking. She is questioning this duality in interior design education.

Dicle Aydin and Ummugulsum Ter studied the concept of campus plaza, centred on a case study of the outdoor space of the Selcuk University located in Konya, Turkey. They base their research on a case study approach that investigates the plaza as an outdoor space providing individual and social benefits to campus users and to determine the imperatives that pertain to the design of this important campus space. They developed a descriptive and empirical study and analysis to determine the plaza’s spatial qualities.

This issue does not include reviews or trigger articles but I promise Archnet-IJAR readers that our forthcoming issue will witness new developments for the book review and trigger articles section. Dr. Amira ElNokaly from the University of Lincoln, United Kingdom had kindly agreed to act as book review editor starting our next issue. This section is expected to complement the refereed articles section and to expand the scope of issues presented to the
readers of Archnet-IJAR.

I would like to reiterate my thanks to Dr. Magda Sibley and to Dr. Fodil Fadli for their marvellous contribution to this special edition of Archnet-IJAR.

Ashraf M. Salama
Chief Editor, Archnet-IJAR
November 2008

Ashraf M. Salama
Ashraf Salama holds B.Sc., M.Sc. and Ph.D. degrees in Architecture. He is Professor of Architecture currently holds a Reader in Architecture position at Queen’s University Belfast, Northern Ireland, United Kingdom. He taught and conducted research at Qatar University (2006-2008), was Associate Professor at KFUPM (2004-06), and was the Director of Consulting at Adams Group Architects in Charlotte, North Carolina, USA (2001-04). He is licensed architect in Egypt received his training at Al Azhar University in Egypt and North Carolina State University, Raleigh, USA. Salama chaired the Department of Architecture, Misr International University in Cairo (1996-01). He has published numerous papers and authored and co-edited five books on Architectural Education: Designing the Design Studio (USA), Human Factors in Environmental Design (Egypt), Architectural Education Today: Cross Cultural Perspectives (Switzerland), Architecture as Language of Peace (Italy), and recently, Design Studio Pedagogy: Horizons for the Future (United Kingdom). He is member of the scientific boards of several intl. journals including Open House International, Time Based Architecture International, and the Chief Editor of “Archnet-IJAR.” He can be reached by email at asalama@gmail.com or ijar@mit.edu.
This special issue on hammâms in the Mediterranean addresses a research subject that has been far too long neglected. Commonly known as “Turkish baths”, hammâms, or public bathhouses, were important facilities in Islamic cities. Although the institution flourished and spread over a large geographic area under the Ottoman Empire, the Islamic bath is not of Turkish origin. The hammâm as a building evolved from the Roman and Byzantine public bath houses and has been adapted to suit the washing requirements of Islam. Located near mosques, souks and residential centres, hammâms played a key role not only in providing a washing facility for the conduct of major ablutions necessary before praying but also a venue for social interaction and rituals, marking religious celebrations and major events in the life of women.

The hammâm, in the European imagination, remains a utopian space as depicted in Orientalists’ paintings. A large central pool is a recurrent feature in paintings such as “After the bath” by Rudolf Ernest, “Bathing in the Serglio” by Theodor Chasseriau, “Steam Bath”, the “Great Bath” and “Nargileh Lighter” by Jean Leon Gerome. Yet large pools are a rare feature in hammâms and, when available, they are much smaller and do not occupy a central position in the spaces. Indeed, the transition from the roman bath to the Islamic one meant that large cold water pools disappeared completely. Small hot water plunge pools are consistently found in the historic hammâms of Cairo because of their role in heating the spaces. This is because the under-floor heating system (the hypocaust system of the Roman baths) was abandoned in the hammâms of Egypt. Small plunge pools were also found in the hammâms of Syria, Lebanon and Palestine. In all these cases, each plunge pool is located in a secondary room and not in the main space.

In Ingres’s famous painting the “Turkish Bath” (1862, Musee du Louvre, Paris), erotic images of naked women in the hammâm are depicted. It is interesting to note that Ingres never travelled to the East. While preparing this picture, the artist read and copied out the French translation of Lady Mary Monttagu’s account of her visit to a hammâm in the early eighteenth century. Although she emphasised the fact that there was no impropriety amongst the large crowd
of bathers, Ingress seems to have ignored this comment in spite of the fact that, for centuries, hammân etiquette requires women and men to remain partially clothed.

Memories of long happy hours spent with my late grandmother in a hammâm in Algiers were one of the reasons behind my interest in this building type. This led me, since the 1990’s, to apply for and receive various research grants from the Arts and Humanities Research Council in the UK with the aim of cataloguing the surviving hammâms throughout the Mediterranean countries and understanding the way in which they are still functioning, used and perceived today by contemporary society. This interest gained an international dimension with my participation in the EU funded FP6 “HAMMAM – Hammam, Aspects and Multidisciplinary Methods of Analysis for the Mediterranean Region” project during which I led two key work packages dealing with architectural typologies and restoration technologies of hammâm buildings in the Mediterranean region.

The HAMMAM project was led and administered by Dr Heidi Dumreicher and her team at OIKODROM (The Vienna Institute of Urban Sustainability) who brought together an impressive multidisciplinary consortium of researchers and practitioners from both Europe (United Kingdom, France and Austria), and Middle Eastern and North African countries (Turkey, Syria, Palestine, Egypt, Algeria and Morocco). This three year research programme was carried out between 2005 and 2008 during which on-site, in-depth, multi-disciplinary investigations of case study hammâm buildings and their neighbourhood were carried out in the cities of Ankara (hammâm Sengul), Damascus (hammâm Ammuna) Cairo (hammâms Al-Tanbali and Bab al Bahr), Constantine (hammâm Suq El Ghzel) and Fez (hammâm
Seffarine). Unfortunately field work could not be completed on hammām Al Samarra, the case study in Gaza, due to the difficult political situation. Field work involved research teams from Europe and Southern Mediterranean countries working intensively together for a period of two weeks in the location of each of the case study hammāms around the Mediterranean. Experts from different disciplines and backgrounds such as architecture, building conservation, urban planning, sociology, history, economy, water engineering, environmentalist, artists and film makers (from Europe, North Africa and the Middle East) worked closely together and with the inhabitants of the neighbourhood where the case study hammāms are located. The work was aimed at forming scenarios for the sustainability of the hammām and its neighbourhood by developing a deep multidisciplinary understanding of both the tangible and intangible dimensions of this heritage building and the contemporary transformations taking place within it and its neighbourhood.

It is interesting to note that as a result of the work of the HAMMAM consortium, local and international awareness for the safeguard of hammām buildings has been raised. Some winning stories include the case study hammām Ammuna, a small neighbourhood hammām in Damascus away from the tourist area. This building has been saved from closure and decay as it has been purchased by a local private investor who restored the building and re-opened it as a working hammam for women with the introduction of contemporary facilities and services. This hammām has become a focal point for the local community. Its restoration and re-opening, have brought new hopes for this otherwise neglected neighbourhood. It has also triggered new local initiatives for improving the urban environment of the extra-muros historic neighbourhood of Al Uqaiba.

Another winning story is that of the Supreme Council of Antiquities in Cairo who has accepted for the first time the concept of restoring hammām al Tanbali and re-opening it as a functioning hammām, reversing the current tendency of restoring hammāms as buildings to visit and look at rather than use. It is therefore with great pleasure and pride that I have been
given the opportunity to edit this special issue of IJAR. My thanks go to Dr. Ashraf Salama for giving me the opportunity to present this work. Special thanks are also due to Dr Fodil Fadli, my research associate for his invaluable contribution to this issue and continuous support. Many of the papers presented in this issue would not have been possible if it were not for the financial support of the EU for the HAMMAM project and the efforts of all the members of the HAMMAM consortium for their invaluable contribution to this issue.

This issue brings together some of the results of the HAMMAM project through a selection of papers written by authors who are members of the consortium. It also includes papers by researchers outside the HAMMAM consortium, completing the picture of the hammāms in countries not covered by the HAMMAM project such as Tunisia and Libya. Three other papers by members outside the consortium will be published in the next IJAR issue.

The papers in this issue have been organised according to three broad themes reflecting the multidisciplinary nature of the work. These themes are: social and cultural aspects, conservation and heritage protection, urban and architectural analyses, environmental evaluations and future scenarios of sustainability. The papers cover case studies in the whole area of North Africa from Morocco to Egypt as well as others in Syria and Turkey.
This special issue starts with the paper of Kolb and Dumreicher which argues that the hammām is a rich tangible and intangible Mediterranean heritage. It is a living cultural heritage with specific social and cultural practices and rituals that are still alive across the wide geographic area around the Mediterranean. This is followed by El Kerdany’s paper which discusses the current threats to the survival of hammāms pointing to “Modernization” and “Islamic Fundamentalism”. Both tangible and non-tangible dimensions of heritage are examined, based on recent field studies that recorded changes in the function of two currently operating historic hammāms in Cairo.

The issue of legal protection of hammāms as heritage buildings is then discussed in al-Habashi’s paper which compares the various protection frameworks in the five Mediterranean countries where the case study hammāms are located. The paper explores the types of legal protection that prevail and their impact on the current status of the buildings. A number of recommendations are made to establish a coherent legal protection system that respects ethics of heritage conservation and emphasizes the revitalization of the hammāms’ social, financial and health roles in the society.

The hammāms of Fez (Morocco), Constantine (Algeria), Tunis (Tunisia), Tripoli (Libya) and Damascus (Syria) are then presented in a series of papers discussing their urban and architectural characteristics and providing a clear picture of the common features that span time and geography as well as the specific characteristics linked to their geographical location. The Raftani and Radoine paper focuses on the hammāms of the world heritage city of Fez and highlights their characteristics which are reminiscent of the small Roman baths or balnea found in Volubilis.

The paper of Debbach presents the Ottoman bath of Suq el Ghezel in Constantine—Algeria, and discusses the contemporary challenges for its survival as an operating bath house due not only to the changing social and economic context but also to contemporary fundamentalist religious interpretations which make the hammām a forbidden space for women.

Bouraoui’s paper presents an overview of the hammāms of Tunis highlighting their morphological characteristics. It identifies recurring systems of spatial organisation based on systematic classifications and analyses of the hammāms’ spatial components and their relationship to each other.

Sibley and Fadli’s paper presents an analysis of the two remaining working historic hammāms of the medina of Tripoli and the way they are used and perceived today by the locals and North African migrants living inside and outside the old city.

Aboukhater’s paper provides an analysis of the morphological characteristics of the internal layouts of several hammāms. Examples are chosen mainly Damascus and Fez. Using basic concepts of Space Syntax the paper highlights how the layout of the hammāms responds to implicit social rules of privacy, segregation, control, movement and social interaction.

The internal environmental conditions of the five traditional hammām buildings investigated in the HAMMAM project are investigated in two papers, one by Bouillot, the other one by Mahdavi and
Orehounig. The passive environmental strategies are explained in Bouillot’s paper. Data on indoor environmental (thermal) conditions and outdoor microclimatic conditions in the immediate vicinity of five traditional hammams located in Egypt, Turkey, Morocco, Syria, and Algeria was collected by Mahdavi and Orehounig who present an objective assessment of the actual performance of these buildings and evaluation of their strengths and weaknesses.

A contemporary hammām recently completed in Brodum (Turkey) as part of a wellness complex is presented by ǧdiriğil, the architect of the project. The paper highlights the approach towards integrating into a contemporary
project some of the lessons learned from the vernacular architecture of the hammāms in Turkey. However, the author argues that newly designed hammām facilities will inevitably differ from the traditional ones. The differences will find expression in the architectural solutions chosen to accommodate the addition of new activities to the core hammām function.

Last but not least the paper of Levine et al ends this special issue with a broader spectrum of considerations related to the relationship between the hammām and the question of sustainability. Levine et al argue that the outcome of corporate capitalism has not been what was initially expected – a greater wealth for the few and greater poverty for the masses is evident in many developing economies. It is also argued that the North African Medinas still have existing life patterns that are remnants of a proto-sustainable past. The question that is raised is how can we develop scenarios that propose a sustainable future for these hammāms while being respectful and supportive of the historic local culture yet also create a viable strategy for developing a sustainable mode of contemporary life?

It is hoped that this first issue on hammāms is the beginning of further research and publications in the field. The University of Liverpool’s School of Architecture has a research group researching hammāms in North Africa and the Middle East and building a database on hammāms in the Mediterranean countries.

Dr Magda Sibley
Senior Lecturer in Architecture
The University of Liverpool
msibley@liv.ac.uk
http://hammams.info/org/
http://hammams.org

Magda Sibley
Dr Sibley is a senior lecturer in Architecture at the University of Liverpool school of Architecture. Her research examines world heritage Islamic cities in North Africa and the Middle East with particular emphasis on the transformations of the residential quarters. Two building types have been the focus of her research: the courtyard house and the public bath or hammam. She has been awarded various research grants from the Arts and Humanities Research Council in the UK (AHRC) and the EU to carry out field work on the public baths in the Mediterranean world heritage cities. This work recently gained an international dimension with her partnership in the European consortium for the HAMMAM project, funded under the 6th Framework Programme - Specific Targeted Research Projects (STREP) (see http://www.hammams.org). She has also been successful in securing a large AHRC research grant in June 2006 to document the historic public baths of North Africa. This project is funded for a period of three years. She has also established a research group on hammams at the Liverpool School of Architecture (see http://www.hammams.info/). As well as her hammam work, she is also involved in a four year EPSRC funded research project led by Salford University, SURegen - Integrated Decision Support System for Sustainable Urban Regeneration, where she is investigating heritage-led urban regeneration. She is currently supervising PhD research projects on heritage-led sustainable urban regeneration, eco-tourism, low-energy courtyard housing and sustainability assessment methods. She is fluent in French, Arabic and English and can be contacted at this email address: msibley@liv.ac.uk
THE HAMMĀM - A LIVING CULTURAL HERITAGE

Bettina Kolb and Heidi Dumreicher

Abstract
This paper argues that the hammām – the Islamic public bath – has a double value from the point of view of cultural heritage: it is a valuable historical building with a rich architecture and specific cultural phases. It is also a socio-cultural heritage. The HAMMAM EU funded study confirms that within the case study hammāms in five different countries around the Mediterranean, there is a vivid social life and specific washing ceremonies and festive rituals that are still being practiced. Not only did the study presented in this paper examined the architectural value of such a building, but it did also examine the social meanings of the hammām and their contribution to a common collective memory. With its current contemporary social life and its associated practices of traditions and rituals for the washing procedures within the bath, the hammām has the potential to be a “living cultural heritage” and can contribute to a contemporary quality of life for clients, neighbours and visitors. This paper describes the method of photo interview, as a practical visual tool to explore the social meanings of space.

Keywords:
Hammām, cultural heritage, social life, public space, photo interviews.

Introduction
The hammām, the traditional Islamic bath, is a cultural heritage not only from the historical, and architectural points of view, but also for its socio-cultural aspects. The contemporary public baths, investigated in the HAMMAM study (Hammām, Aspects and Multidisciplinary Methods of Analysis for the Mediterranean Region) appear as socio-cultural institutions and provide time, space and opportunities for individuals to share social activities, habits and traditions on a weekly or monthly basis. The hammām case study results showed how the socio-cultural values could be considered along with the architectural and restoration investigations in order to identify good practice examples of a running a hammām today and show how it could operate with contemporary social activities as a living cultural heritage.

Within the HAMMAM study, the social scientists observed meaningful socio-cultural patterns within actually working case study hammāms in different Islamic cities like Ankara, Cairo, Constantine, Damascus and Fez. Although the institution of public baths is spread over
a geographically wide area, from Turkey to Morocco, there is a common understanding in the region about what a hammām is. Users as well as people, who themselves do not use hammāms, described similar habits and traditional rituals contributing to a collective memory about the hammām. This common understanding of how to use and what to do in this traditional building: the aligned traditions and habits which are practiced and the specific objects used inside the hammām, contribute to make all these aspects part of the rich intangible cultural heritage associated with this building type. In the Mashreq countries, and also in the Maghreb, stories, cultural objects and artefacts which are part of the daily use in a hammām were generally similar and show a common Islamic background and understanding.

**What is a living cultural heritage?**

During the HAMMAM study, the intangible life in the building of the hammām became visible and focusing on this part of the social life and activities the term of the “living cultural heritage” was created. To speak about a “living cultural heritage”, means to take into account the social living, the intangible which takes place within the architectural building of the hammām as part of the cultural heritage. The term “living cultural heritage” designates the contemporary social life, the traditions, rituals and habits, which are practiced in a traditional bath and which are attached to this building type throughout history. Like the intangible life within the tangible building the living culture of the traditional bathing, peeling and massage with their specific objects and artefacts and associated social interactions, within the historic hammām makes this cultural heritage part of the contemporary social live. Focusing on the “living cultural heritage” and its impact on the daily social life of the neighbourhood within which the bathhouse is located, to the rehabilitation plans of these baths, it is important to make this cultural heritage building a contemporary place that contributes to the life quality of its users, while respecting its historical authenticity and its traditional function as a bath.

The hammām provides the traditional function of bathing, in public and semi public spaces, within a historical heritage building and caters for clients from different social background, coming not only from the immediate neighbourhood of the structure but also from other areas of the city. Sustaining the bathing function is one of the precondition and a necessity for the hammām to be considered as a living cultural heritage; that supports social encounter and social activities for individuals as well as for groups. In order to maintain a social life in the hammām and its neighbourhood, the original functions of bathing and rituals are
combined with the provision of a set of modern services.

**Space and Social Interaction**

The space and the spatial surrounding materialised in the building is the built environment for the human being in general, social interactions between individuals and a space and opportunity for specific cultural rituals. The space is an important environment creating a certain atmosphere, which can support or contribute to a social interaction between individuals.

The authors work with the hypothesis that the physical places are strongly interlinked with the social interactions within a community (Dumreicher, Kolb 2008). The hammām building contributes with its architectural features to a unique experience and provides with the sound of water, the natural lighting filtered through the pierced domes and vaults, the steam from the hot water and the smell of spices and soaps a special and unequalled atmosphere.

**Body and soul within the architectural building of the hammām**

The hammām is a specific building that provides for the human body a warm and steamy atmosphere with hot and cold water, light and dark places for washing, and contributes to healing by supporting the body function of sweating as well as providing the service of scrubbing and massaging the entire body. The traditional bathhouse is a place where clients take care of their body, with different levels of exposure to others, depending on their religious beliefs and rules. With its traditional body and beauty treatments, the traditional hammām can be considered as a good support for personal wellbeing and preventive health care. Within the HAMMAM project, it was clear that the case study historic hammāms and their contemporary usages are places which are strongly associated with the cultural interpretation of the body. In the contemporary Islamic society the rules of the body treatments and the behaviour codes especially for women are more and more influenced by religious beliefs and practices. The hammām as a place for health and body treatment is a good indicator for the changing behaviour codes. Although the case studies are located in different countries, all clients interviewed describe the use and the non-use of the hammām in connection to body, health and acceptance of the women’s role. The individual is supporting his or her personal health and hygiene by using a hammām, but it is also a collective place, a place for social contacts. The hammām in its collective function is also a semi public meeting place, especially important for women.

**The Method of Photo Interview**

In the HAMMAM study, the authors were observing the daily life perspective of the hammām as perceived by the clients and residents of the neighbourhood. The main research question was, how does the local and neighbouring urban population integrate the different functions of the traditional bath in their daily life and how does the hammām contribute to the perception of life quality? How does it support the quality of life in the neighbourhood? Within the selected five case study sites, the authors were investigating the social aspects of the relationship of the local people and the local community to the case study hammām.
After the field visits to the case study sites, the original hypothesis that the hammām should be maintained as a living institution that continues not only the tangible, but also the intangible heritage, was now supported by the finding that the hammām needs maintenance, but also changes to adapt to the contemporary requirements. New services, new standards are expected worldwide, and the hammām has to relate to these new expectations in order to continue to fulfil its role in a contemporary society.

In this study, the authors applied the empirical method of photo interview (Harper, 1987; Wuggenig, 1990) as the main data generating instrument, in addition to empirical observation methods such as qualitative interviews and participatory observations. The photo-interview is methodically seen as a tool of the visual sociology, combining social patterns and spatial impressions of a local area. The photo-interview represents a participatory approach and studies the local importance and meaning in a bottom up approach. It avoids any bias that can result from the researcher’s guiding principle when collecting the data, as this relies entirely on the activity and the view of the photo-interviewees in taking photos of the hammām and its neighbourhood. Thereby the photo can be seen as a potential of visualisation (Kolb 2007) and supports the communication in the interview and the overall research process. For the photo interviews, selected people in the neighbourhood took their own photos of their district and gave an interview where they made a narrative about the sites which they photographed.

The photo interview is one of the rare sociological methods able to create a relationship between spatial and societal realms. Within the material, the photo represents the local space, gives a concrete image of the mapped material and the social situation, and the interview text gives a first interpretation of meanings and relevancies. The meanings of the local residents become therefore clearer and are the focus of this research. These results were confronted with a possible scientific approach to the specific research questions. The basic scientific interpretations were based on the theory of sustainability, as defined by Levine et al (Levine, Dumreicher, Radmard and Yanarella, 1999) and the theoretical frame of “Seven Fields of Spatial and Social Encounter” (Dumreicher & Kolb, 2006). The definition of sustainability gave the basis for a combination of spatial and societal approaches by binding the sustainability approach to a local place within its actual physical or abstract territory (Levine, Dumreicher, Radmard and Yanarella, 1999).

Choosing the local place as a starting point for the sustainable future scenarios was a necessary basic condition and an anchoring point. By focusing on local identities and their social perceptions, the authors were able to bring up diversified as well as specific characteristics that can furthermore serve as examples for larger activities, in the same place or somewhere else. These findings are in line with the theoretical statement that sustainability is local: “sustainability happens at a specific place – the living environment of a settlement within its region, including living patterns and creativity of the tenants” (Levine, Dumreicher, Radmard, and Yanarella, 1999). The authors worked with the underlying paradigm that there is a strong conjunction between the physical places and the social interactions within a community, and
that encounters in the neighbourhood and appropriation of public space demonstrate this process.

Within the HAMMAM investigations, the authors held five to eight photo interviews in each of the five case study cities, supplemented with several qualitative interviews and field observations within the interdisciplinary field visits. As a whole, 562 photographs were taken by local people representing the visual data material, some of them were discussed in an interview. Those interviews were transcribed in their original language in a word by word transcripts (English, Arabic, Turkish and/or French). This data collection generated a daily life perspective to each case study site of the hammāms in a visual form by taking photographs, and in verbal form within the interviews. This field work process of the photo interviews produced an intense contact between researchers and interviewees. The interviewee brought his or her approach to the world of the researcher. The reliability of this data is high because of the high involvement of the interviewees. This data material is the empirical basis for an analytical interpretation figuring out the following results and answering the local patterns under a socio cultural view. The photos were important outputs and the photos as well as the interview texts were data material for the sociological and linguistic interpretation. Within the sociological approach the authors focused on manifest and latent aspects – represented in photos and interviews - following the interpretation of objective hermeneutics (Oevermann, 1993). The following sections of this paper give an overview of relevant results of the HAMMAM study.

The Building of the Hammām and its Social Life

There is a common understanding of the hammām as of an important cultural value. This is undoubtedly the case for the old generation – the grandparents, especially the grandmothers, and is transmitted to the young through story telling. For older clients, the hammām is part of their value system and they can clearly argue why they find it so attractive to go there regularly not only because of the architecture of the building and the environment it provides but also because of the rituals associated with its usage. These particular clients have been using the hammām since they were children and they have a rich personal experience and a common social experience in using the bath. It is clear that the hammām is also a carrier of a common collective memory, even for those who have never used it personally, but know of it through their grandmother or grandfather experiences and stories. This knowledge not only includes the weekly or monthly event of going to the public bath but also the special events associated with the use of the hammām before major religious and family celebrations such as pre-wedding ceremonies when specific dishes and sweets are brought to the hammām and consumed after bathing. The hammām is therefore, a place where a number of cultural traditions rooted into the Islamic history are still present and practiced. As such it is still a place for a living socio-cultural tradition in addition to its role supporting cleanliness body relaxation, treatment and beautification.

The hammām as a place for body and health

The hammām is a special place for the body and the architectural settings serve this specific
body experience. It is a place where traditional washing ceremonies can take place including scrubbing the body to remove dead skin and massaging it but also where specific body treatments are applied for rheumatism and back pain. Furthermore, the hammām plays an important role in providing the washing facility for religious purification before the Friday prayer and for women’s beatification before wedding – The hammām is a place for the individual body and health embedded in collective social interactions and rituals.

An important aspect that was mentioned by the interviewee was that the hammām should be a clean and safe place. Maintaining a good level of cleanliness was found to be a challenge in most of the case study hammāms as well as providing contemporary standards of health and safety. The traditional bath is also seen as a good place for improving health, where the body is well treated and health condition promoted. The role of the staff is therefore of paramount importance in ensuring that good standards of cleanliness and safety are maintained. Furthermore, clients expect the availability of other services within the historic public bath such as a hairdresser and a fitness facility as these are found in contemporary beauty centres. Therefore the introduction of new services within the historic hammāms could form an additional asset and attract more clients.

**A place for traditional rituals**

The hammām is a venue for a number of traditional rituals linked to major events in the life of a woman. It is a place where the strong ties to the spiritual and religious values are manifested through a living tradition. It is a place for female rituals, as women use the hammām before their wedding, forty days after the birth of a child, and before specific religious festivals such as the end of the fasting month (Ramadhan), and the Aid El Adha. Besides the traditional rituals for the wedding ceremony that are linked to the public bath, there are other occasions when women choose the hammām as their special place for celebrating a special event and sharing a festive meal. Beside the function of bathing the hammām is also a place where family, relatives and friends meet and come together. It used to be the only public social space where women could meet other women outside their homes without being controlled by a male family member such as a father, an older brother or a husband.

The interpretation of the social traditions and rituals practiced in the hammām are strongly influenced by some current interpretations of the religion. In times of the forbiddance to show the body in a semi public space, the hammām can become a shunned place. As a secular institution, in a period where society undergoes growing fundamentalist religious interpretations, the hammām turns into an immoral place (“haram”), where nudity is presented in a forbidden mode. The accepted societal role of women, the treatment of the body and the religious interpretation of the body has a significant influence on the decisions of using or not using the hammām. Even if it (the hammām) has been part of the Islamic city for centuries and is still a place where tradition can be experienced, some current interpretations of what is allowed and not allowed in Islam have made it a forbidden place to go for some people. The behaviour patterns in the public bath vary a lot according to the religious background in the
country and in the neighbourhood: in a rather fundamentalist context, the hammām visit stands for ablution and purification before the prayer, especially for the Friday prayer. In the context of the contemporary lifestyle in each location, it is a focal place where some societal changes become visible.

**The staff of the hammām**

The quality of staff contributes highly to the perceived quality of a hammām, even more than it’s aesthetical and architectural features. The service provided by the facility staff is an indication of the quality assurance of the treatments being provided. With their normative social role of control they establish the codes of behaviour and are guarantors for the social integrity and the cleanliness within the bath. Hammām staff establishes the codes of behaviour and guarantees for the social acceptance of behaviour inside the hammām. Some of the rules are communicated to clients in the form of posters with clear rules for the usage of the facility. However, there are also hidden rules that provide a framework for a what is considered as an acceptable behaviour, finding a fine balance between the need to control clients and the fact that the hammām is a place for relaxation and well being. Many members of the staff are aware of their place in society based on their work in the hammām. They take over responsibility for the actions of their clients, providing the context and rules for a well working public bath.

Together with the management, the staff have the opportunity to create a safe place for the experience of well being in the hammām, although the building is sometimes situated in an neglected urban context. Results of the HAMMAM study show that the staff is trained in a learning by doing approach. The old techniques of washing and body treatment, or cultural ceremonies etc. have been partly researched within this study and could be used, as part of hammām staff training program. The staff of a living cultural heritage hammām, should be knowledgeable about the traditions of using the hammām and familiar with its cultural value. They should be properly trained in providing services such as the traditional body scrubbing treatment using the “kese”, hair removing treatment using Agda and Sabunlana and body massage. They should also be trained to cater for traditional ceremonies within the hammām by arranging for traditional food, music and dancing.

Figure 2: Inside the Hammām, Constantine 05/2007, Algeria, Photo Interview 01 (Source: Authors, 2007).

**Inside and outside – and the entrance of the hammām**

The entrance of a hammām follows hidden rules and is much less visible in the urban fabric than that of any other public buildings. The entrance is usually located in a back lane that
is not very frequented so that a discrete usage of the hammām is possible. For the specific needs of privacy for women, the social control should not be exercised by a man – not even by a shopkeeper in front of the hammām entrance. A piece of cloth is usually hung over the hammām’s entrance to indicate its usage by women and prevent men from entering the building. In some of the case study, the women’s entrance is discreet and is accessed from a back street. In Damascus case study, the new shop is located directly opposite to the hammām’s entrance and was reported by interviewees as a nuisance. Women respondents mentioned being “observed and controlled” when entering or leaving the building. It is frequently mentioned in many traditional stories and songs that the hammām make women more beautiful and no men should see this beautification. However, some women interviewees in Damascus complained about situations, where some men can observe female clients, who are about to enter or leave the hammām, breaking some traditional codes of conduct. This shows the changing social situations in the contemporary context which is not only affecting the environment outside the hammām but also inside it. An incident was mentioned by various interviewees; where a mobile phone was used inside the bathing spaces provoking discussions in the whole neighbourhood. The incidence that a mobile phone could be used for taking photos in a hammām started a vivid reflection about the proper behaviour in and outside the public baths, especially for women. There is a large spectrum of what is allowed and not allowed inside the bathhouse, and this is mediated by various religious rules and interpretations specific to situations and cultural contexts.

The Hammām and its Meaning for the Neighbourhood

Focusing on the local process within its societal and spatial frame in several case studies, like Cairo and Damascus, the theoretical framework of “Seven fields of spatial encounter” has been adopted for use in this study (Dumreicher, Kolb 2008). The daily life practice gives a strong impact to the usage of space. The public squares, the spaces in front of shops and other buildings, the streets, all of the spatial surroundings create the possibility for social life practice. The existence of the place contributes to the development of a social life based on its local identity and emotional co-ownership. According to these concepts, the possibility to live and act in an existing spatial environment affects the individual’s feelings its relationship to this specific place and influences its social usages. “Emotional Co-ownership is a strong attachment to a place that results in an interest from local citizens in the perpetuation of the valued qualities of the place. Most often this attribute is found in an empowered citizen who is involved in the decision making process of her or his locality.” (Dumreicher, Kolb 2003: 246).

As observed during the HAMMAM project field work, the institution of a hammām is often established as a central building in the neighbourhood and supports its social and economic activities in many ways. There are several social functions that the traditional public bath takes over for the neighbourhood on individual level but also in a collective responsibility. It is a meeting point for neighbours and a specific meeting place for women with their children, family members and friends. It is also a place of personal hygiene for the
The Hammām - A Living Cultural Heritage

BETTINA KOLB and HEIDI DUMREICHER

Craftsmen and workers of the neighbourhood. In the urban context, the hammām constitutes an important urban facility of the medina, alongside the sabīl, the mosque, the bakery, the library, and the madrassa (Coranic school).

The hammām is connected to its neighbourhood in many ways, and without it (neighbourhood), it could not serve its traditional functions. In the context of the five case studies investigated, various social activities were found to take place in the hammām. These included networking between women and intra-generational exchanges between different peer groups. It was also found that economically the hammām is a place where goods are sold and can have a flexible entrance fee to support the underprivileged people of the neighbourhood. Socially, it is a building which is strongly valued by the residents in the neighbourhood: good and bad news spread over from the hammām into the quarter: - social events, new job opportunities, the last marriage or when something goes wrong. For instance when there is pollution from the hammām’s heating system, the whole neighbourhood is informed. The hammām is therefore an important access to information centre in the quarter.

A meeting place within communities
The hammām is a place of intra-generational exchange for the different groups. Old people go there with their own friends; the young generation shares it with their peers. Besides the traditional rituals that are linked to the public bath, there are other occasions when people choose it as their special place for arranging a meeting, such as a place that a group of business people can hire for an evening to strengthen the cooperation between employees in the company. As mentioned by the interviewee in one of the case study, when a family member who lives in a far away country, comes to visit her or his family, a special visit to the hammām is organised as one special event. As a meeting place for the community, the hammām is a central building in the neighbourhood and it is supporting the surrounding social and economic activities, shops and small workshops..

In all the case studies, the architects and urban planners of the EU funded HAMMAM consortium have developed proposals for upgrading the immediate surroundings of the case study hammāms and where appropriate creating communal spaces for cultural and economic activities. They have also proposed the introduction of new facilities within the building spaces such as a small cafe, a hairdresser in order to enhance the services provided and attract more clientele.

Conclusion
The hammām, or the traditional Islamic bath, is a cultural heritage not only from the historical, and architectural points of view, but also for its socio-cultural aspects. It is considered as a living cultural heritage which should be maintained with its original bathing functions, and where possible should not be turned into a museum, shop, café or restaurant. The hammām is a unique context where the traditional culture still exists and is practiced in a cultural heritage building. For this reason, existing historic public baths could be developed as a living cultural heritage, where social traditions, rituals and habits can be presented in an authentic architectural space. Maintaining the hammām as an Islamic bath with its various functions
for the individual and the communities should be part of the general socio-cultural concept for the rehabilitation of its neighbourhoods. It is part of a common culture and embedded in a wider societal process, such as the interpretation of the body and questions of privacy and hygiene. Obviously the institution of the hammām is affected by contemporary social change and changing living conditions. Therefore the question is how to integrate the historical institution of a hammām into a contemporary way of living. Which elements of the architectural and cultural features should be maintained and which ones should be changed?

The physical characteristics of the building play a major role in the future design of new public baths, however, the management aspects referring to the activities and services offered play an equally important role. In a living cultural heritage, the hammām practice could combine traditional experiences with contemporary services. Adapting the public baths to a contemporary standard is necessary so that clients are invited to use it within a healthy setting. Furthermore, the hammām owners need to adapt the concept of management of human resources according to contemporary requirements and standards. It is the staff of the hammām who guarantees personal safety and social management within the groups of clients. In order to establish traceable criteria for a living cultural heritage hammām, a specific staff programme should be introduced supported by the owners but also supported by a governmental agency in order to implement modern standards of hygiene and health and safety. Governmental agencies could make a statement in safeguarding the cultural heritage of traditional public baths, by supporting it with an approved training for the staff and introducing economic incentives. In this way, hammāms will...
The Hammām - A Living Cultural Heritage

BETTINA KOLB and HEIDI DUMREICHER

contribute to the necessary upgrading of the daily life qualities for the dwellers of the rapidly changing neighbourhoods within historic cities.

**Acknowledgment**

HAMMAM – Hammām, Aspects and Multidisciplinary Methods of Analysis for the Mediterranean Region, FP6-2003-INCO-MPC-2, Contract Number: 517704, Coordinator: Oikodrom, The Vienna Institute for Urban Sustainability. Thanks to the local partners in the case study teams for their hard work, dedication and supporting the process of the photo interview with selection, translation and transcription. Field work was also facilitated by scientific coordination of OIKODROM team without whom the multidisciplinary process would not have taken place.

All this work would not have been possible without the financial support from the European Union and the Federal Ministry of Science and Research in Austria. EU project: “HAMMAM – Hammām, Aspects and Multidisciplinary Methods of Analysis for the Mediterranean Region”, FP6-2003-INCO-MPC-2, Contract Number: 517704, Coordinator: Oikodrom, The Vienna Institute for Urban Sustainability.

Data: The participatory approach of the photo interview generates the view of the local residents to their neighbourhood. The reliability of the data is high because of the relatively high involvement of the respondents. This process of photo interview produces an intense contact between researcher and interviewees. The interviewee brings his or her approach to the world to the researcher and highlights the issues that are important to them. The view of the local people can be seen in the photos; the material gives the frame and contributes to the scientific knowledge. In each HAMMAM case study, we held five to eight photo interviews, supplemented with qualitative interviews and observations. The collected photo material includes 562 photos, photographed by the photo interviewees, showing people and buildings in the neighbourhoods. The interviews are available on word by word transcripts in English, Arabic, Turkish and/or French. Interviews made on the spot of the hammām field studies. Photo-interviews were carried out by Heidi Dumreicher and Bettina Kolb. Photo-interviews with local experts were referring to their personal photos. The names of the interviewees were changed in order to guarantee their anonymity by using code-names, unless they expressed the wish to be named with their real names.

**References**


Kolb, B. (2007): The potential of visualisation in a transdisciplinary reserarch process, Paper on the conference of British Sociological Association (BSA), Social Connections:


-------------------------

Bettina Kolb

-------------------------

Heidi Dumreicher
HAMMĀM FOLKLORE DYNAMICS IN CAIRO: LESSONS FROM OPERATION TO REGENERATION

Dalila El Kerdany

Abstract
As time goes on, the number of public bathhouses (hammāms) is decreasing in Cairo, which might lead to the disappearance of an important popular heritage that used to contribute to different aspects of the city life. This paper provides an understanding of some of the factors that threaten the heritage of hammāms, while pointing out to two major factors that might look different in ideology but form a strong threat to the survival of the hammām folklore. These are “Modernization” and “Islamic Fundamentalism”. The paper reviews theories in anthropology concerned with the process of “production” and “reproduction” of folklore in general and the traditional public bath in particular. Based on recent field studies that recorded changes in the function of two currently operating historic hammāms in Cairo, Hammām al-malātīlī (Margoush) in Nahāsín quarter and Hammām Bab al-Bahr in Bab al-Shareyah quarter, both tangible and non-tangible dimensions of heritage are examined. Finally, the paper discusses future directions in the reproduction of hammām folklore.

Keywords:
Cairo Islamic architecture; Hammām; Folklore reproduction; building operations

Introduction:
Hammāms: A Threatened Tangible Heritage of Cairo

The number of Cairo popular hammāms has been declining to the extent that they might become non-existent and just a memory of the past. Early 15th century, Al-Maqrīzī counted 52 hammāms in Cairo, amounting to 80 at the 18th century as stated in the memoirs of the traveler (el-Habashi, 2008). Whilst the scientists of the French Expedition identified 72 baths early 19th century, the Tawfīqī plans khitat tawfīqiya of Ali Pasha Mubarak counted 62 hammāms. In 1933, Edmond Pauty stated, in his book on Cairo hammāms, that there were 47 structures (Pauty, 1933). Historical references unanimously indicated that such hammāms offered basic services. They were important in the different aspects of life, as they supported social, cultural and healthcare activities. This was reflected in their architecture and relationship to their urban context (residential areas surrounding them as well as nearby mosques public fountains or Sabilīs) until the beginnings of the 20th century (Ali Mubarak, 1882).
A recent study that attempted to record the Cairo hammāms- among other Islamic monuments- and identified their positions on the maps in the 21st century is the study of Nicholas Warner on the historical monuments of Cairo. Warner identified 17 hammāms within historical Cairo (Warner, 2005). Two other hammāms were identified by Mimar Group as part of its EC-funded research entitled “HAMMAM”, outside the area studied by Warner. These are hammām Tanbālī, and Bab al-Bahr, both located in Bab al-Shareyah (HAMMAM 2005-2008). Four other hammāms in Bulāq Abu el-'Ia, were identified as part of the study prepared by Najwa Abdul-Moneim, (Abdul Moneim, 2007). The total number of the hammāms still existent in 2007 is 23, which are in different state of deterioration or collapse. Taking into account that the number of actually operating ones now does not exceed four structures, and comparing such a small number to that of public baths operating until the first half of the 20th century (47), it is clear that historic public baths in Cairo are on the verge of extinction. The few surviving bathhouses are operating under seriously deteriorating conditions. Their physical state is in an advanced state of disrepair with a loss of many of their beautiful original architectural features. Furthermore, some bathhouses have been restored however, they were subject to technically unsound restoration techniques that are not based on a good understanding of this building type and the vernacular building techniques and materials associated with it. Some have been restored under the supervision of the Supreme Council of Antiquities; others are under the ownership of the Ministry of Endowment (Awqāf) or private ownership. The location of these building in historical Cairo exposes them to serious urban and environmental pressures- not to be dealt within this paper.

As regards to their tangible and intangible heritage dimensions, these buildings have retained their traditional mechanisms; however, they suffer from poor sanitation and do not attract any longer upper and middle-income groups. Even though the Historical Cairo Authority has been restoring some hammāms- such as hammām Ināl and al-Mu’ayyad. Unfortunately all restored buildings are not used with their original function; they are re-used as venues for different cultural activities such as exhibitions, museums, or concert halls.

**Hammām Practice is under Fire**

During the HAMMAM research project, it was clear that contrary to the situation of the hammām in other cities in North Africa and the Middles East, Cairene public baths suffer from the most advanced stage of deterioration in both physical state and daily usage as well as their reputation. They are perceived as backward facilities which have nothing to do with modernization or even immoral places as a result of religious fundamentalism. These two factors have contributed the widespread negative perception of this building type as a facility for very poor people or a venue for immoral sexual practices. Going to the hammāms has become an outdated habit, despised by many religious people, whilst it represents backwardness and hindrance to development as far as secularists are concerned.

For example, we notice that not a single
popular hammām was built in the second half of the 20th century in Cairo. On the contrary, in some other Islamic countries like Algeria and Morocco, where the HAMMAM project research consortium conducted analyses of historic bathhouses, the traditional public bath is still continuing. In a country like Algeria, the hammām is designed and built in the center of new residential complexes just like the mosque or the market. It is similar to other types of traditional heritage of costumes, singing, music, traditional houses, crafts…. etc, which have suffered consecutive shocks as a result of modernization attempts in Egypt – whether these are due to inside or outside forces. It is likely that Egypt may have faced more profound and intense attempts of modernization as compared to other countries, particularly the liberal movement led by Egyptians themselves with a vision to modernizing and developing their country.

The first shock started with the arrival of the French Expedition to Egypt; a confrontation between a highly technological civilization, particularly as regards to weapons, and a much retarded country as then was the case. Perhaps, the best legacy of the French Expedition was the faithful record by its scientists of all the spheres of life-cultural and natural; in addition to recording all monuments of the country.

The second shock came with the rule of Muhammad Ali Pasha, pioneer of modern renaissance of the country. His policy resulted in the most significant and most powerful change of Egyptian society at that stage. For the first time, the change came from within, internally motivated with a vision to working for the best interest of the nationals and upgrading the country to first class nation (Muhammad Al-Johari, 2007).

For the first time, efforts transcended cultural and social differences among cults, races and the various classes. Construction of schools for girls was expanded and teachers’ capacities were developed; even the first Islamic schools were established to teach the girls in tandem with the Western approach, embracing them all from all classes regardless of their ideological beliefs or social status. Teachers and principals were foreigners (mainly from France and Italy). The emergence of socially and culturally mixed schools was an indicator of how much changes were bequeathed customs and traditions.

Educational missions to Europe to study medicine and war craft at Paris as well as engineering at London and military service at Torino continued. These missions were leading to Egypt’s modern renaissance. Modern knowledge and scientific methods developed later were the most important reason for social development, leading to a different view of folklore including hammāms.

The following changes came within the rule of Ismael Pasha, which witnessed the opening of the Suez Canal for world navigation. Ismael Pasha dreamt of turning Egypt into another Europe; he started with Cairo. He established the Ismaelyah quarter to the west of Islamic Cairo or the later known as Khedive Cairo, down town. For the first time in the Orient, a city has been planned and constructed in line with the Western theories in planning; particularly, Haussmann planning of Paris. Even though the planning was western, the engineers, contractors and workers were French, Italian or Armenian, the owners and
investors were affluent Egyptians. Given that this first city, alien to the age old Islamic city and akin to the modern patterns then, particularly the Western as far as design and building were concerned, some conventional patterns of buildings- public fountains sabil, Kuttāb, Wikāla, Khans, hammāms, and religious schools madrassa with their typical four iwān, were excluded; only mosques -masjid- and masjid game’ were maintained. Notwithstanding, these were tinged with the Ottoman style, derived itself from the temple of Aya Sofya (Hagia Sophia), Istanbul, which was converted into a church and then a mosque later on.

Other alternatives for new patterns were erected like the grand department stores (Sidnawi, Secorel, Omar Effendi and Addas), instead of Wikālas, as well as modern western schools rather than traditional religious schools. However, patterns such as the hammām had no alternatives in the new city; these were totally forsaken even with the extensions that took place later north to the old city- Abasseya, or to the west- Giza and Mohandeseen.

As modern Egypt continued to thrive, especially following the 1952 Revolution, over the past half century, education began to grow popular starting from the first years of kinder garden up to university. It became formal and free without prejudices based on gender, religion or race. A quarter of the Egyptian population – or more – had joined formal Egyptian educational institutions. Taking into consideration that such education, since the rule of Muhammad Ali, depended on modern methods mainly derived from the West, this led to influencing folklore to the extent that such education system turned into a melting pot of elements of heritage: different areas, environments and classes. This resulted into a true and efficient operation of the reproduction of heritage.

Some State bodies, especially during the early years of the Revolution, represented in the popular cultural authority (now called General Organization for Cultural Palaces) of the then Ministry of Culture and National Guidance (now the Ministry of Culture after the separation of the Ministry of Information into an independent ministry), worked on compiling folklore in all walks of life and recording it in specialized encyclopedias. These attempts succeeded in preserving – only in records – some elements of heritage. Notwithstanding, such heritage was then used to promote for new ideas of modernism and socialism. We witnessed some attempts at the reproduction of a local-flavored new type of culture that is dependent on popular themes Westerly-patterned as is the case with music, literature, plastic arts and folklore dance (Redha’s troupe and the National Troupe of Popular Arts are good examples).

On the other hand, the rising waves of fundamental religious streams that have connection to Wahabi’s ideologies in the Arab peninsula in the 1970s led to challenging national coherence and cultural specificities of local societies. Thus, these connections – though through different ideologies – combined with modernization attempted to defy folklore and led to the pursuit of the idea of Pan Islam. As a result, folklore is not viewed with ease; rather resisted under different claims. They called upon forbidding Sham Al-Nassim on claims that it is related to pagan beliefs of an extinct Pharaonic civilization, same argument holds for Mother’s day, which coincides with spring, is relevant to that of the Mazdaism. Even the customs inherited from Muslim Fatimids are not
spared such as self-lashing, an Egyptian habit in celebrating the Prophet’s Birthday. There are numerous examples illustrating the opposition of hard-line fundamentalist thinking to folklore. What is of interest here is its opposition to the popular hammām on claims that it is forbidden to be nude even in front of same gender people, there is also the suspicion of same sex relationships which are forbidden according to some verses of the Holy Qur’an – though most of the Imams, have not prescribed a punishment or a penance as is the case with “great sins” or “minor sins” like murder, adultery and theft… etc. It is described in religious thinking as unadvisable “fornication”, whose doer is ostracized.

The Dynamics of Folklore

This study adopts the following definition for the term “Folklore”. Composed of two parts “Folk” and Lore”, it is a term which originated in 1846, and coined by English scholar and antiquary William John Thoms (1803–85). It refers to the traditional beliefs, legends, customs of people; or the lore of people. Hammām is a good example of Folklore and Folk-life in Islamic societies. It includes traditional arts, beliefs, traditional ways of work and leisure, adornment and celebrations. It embodies cultural ways in which a group maintains and passes on a shared way of life. Folklore and folk-life are learned and perpetuated within the context of the “group,” for it is the shared experience which shapes and gives meaning to the exchange.

The threat to the traditional bath with its moral and intellectual dimensions is leading to the disappearance and extinction of both the intangible heritage of traditional practices and the tangible heritage represented in buildings and tools.

Saed Al-Masri defined the process of producing heritage as such: “a complex process involving the continuing practices of heritage, so that it remains alive and memorable among a group of people; this does not mean a fixed absolute or a total change of heritage elements; rather it is renewable and accumulative practices of heritage similar to practicing language. Cultural production processes have certain features, most importantly: frequency of use, retrieval and reinterpretation of heritage elements; attempts at selection, re- introduction, modification and alteration of certain practices; interchange and transference among classes, borrowing and adoption of elements; in addition to processes of enriching heritage reservoir by innovation and accumulation. Popular culture production processes are not confined to one of these multiple forms, but include all of them. Cultural production processes are formed through a continual amalgamation between intentionality and spontaneity” (Al-Masri 2002: 16-17).

Muhammad Al-Johari refers to processes implying the concept of (re)production of heritage “the subject of reproduction puts us at the heart of study of dynamic heritage and “Sustainability mechanisms”; trends in the migration of popular elements; mechanisms of borrowing and adoption; as well as mechanisms of rejection, resistance, abandonment and derision; processes of reinvention, renovation and conditioning exercised on old elements in order to adapt them to a new reality, or on imported elements to adapt to a local reality. Production choice among thousands or millions of different popular heritage elements manifests itself in a process of reproduction. Sometimes, reproduction processes may force the adaptation of some popular heritage
elements derived from a bygone era in order to gain ground and live in a new age. Thus, it is inevitable – or desirable – to introduce change as a mechanism for sustainability” (Al-Johari, 2003: 399 – 400).

From the above discussion, it can be concluded that the reproduction process is:

1. Continual and sustained
2. Intentional and spontaneous, conscious and subconscious by individuals of society
3. Subject to definite processes and mechanisms, while diverse at the same time.
4. Important and necessary to sustain heritage and maintain vivacity and dynamism.

**Current Dynamics in Two Cairo Hammām**

Assuming that popular heritage -folklore- is capable of embracing and digesting change, as well as reproducing new forms that guarantee its sustainability so that such heritage may remain alive among the members of the society adopting it, it is useful to examine elements of change and renewability in such heritage in order to be able to deduce the factors that may allow us to influence future scenarios of hammāms towards their sustainability as an important heritage, while resisting extinction and disappearance.

In her study of the current use patterns of the different spaces of Hammām Bab al-Bahr at Bab al-Shareyah and comparing them to historical studies, Dina Shehayyeb (2006) noticed some changes, like taking off clothes in beit thani (second space or room in the hammām) instead of the first space al maslakh (changing room), also the addition of showers in the beit al-harāra (steam or hot room) instead of using the tasa (pans) for rinsing (HAMMAM 2005 – 2008).

Figure 1: The Entrance of Hammām Bab al-Bahr, Typically Modest. (Source: Sibley, M- AHRC funded project: Historic Hammāms of North Africa©June 2007).
In the anthropological study conducted by Najwa Abdul Moneim on Hammām Margush (al-Malātīlī) at Gamāliyya District over a period of one year (January – December 2005) with an objective to study changes in operation and practices relevant to popular public baths in relation to their preservation and sustainability under contemporary societal variables. The researcher stresses that regulars and staff are keen on renewal and creativity, so that they can cope with the change and contribute to saving the profession from extinction and guarantee
sustainability. This includes the introduction of some activities that help boost economic revenues whether in favor of the hammām maintenance or staff wages’ improvement: charging for Sudanese hennā, selling the Moroccan luffa and some cosmetics, in addition to other services as matchmaking, by keeping pictures of men and women who are interested in marriage. The study also takes note of the change in some of the instruments used and cosmetics as well as the quality of furniture. It was also noticed that the health service and back - to - nature practices in alternative medicine and beautification surpassed other services of the hammām (Abdul Moneim, 2007).

Alaa el-Habashi, through his study of the technology behind the operation of hammām bab al-Bahr at Bab al-Shareyah, observed basic changes; some were positive, and others negative;
- The mustawqād (burner) fueled by the burning of garbage was replaced by geyser fueled by gas in order to heat water. No doubt, the purpose of such change is to positively reduce air pollution. However, this had a negative effect regarding disposal of garbage in popular districts. It also put an end to stewing fava beans “fūl” in the traditional way.
- Changing the old system of supplying water to the hammām from tanks or water reservoirs daily filled at a higher level, then circulating water in uncovered channels on the roof; to new water tanks connected to the city water supply system with sealed pipes, for transporting water to the bathing spaces. This had a positive effect as regards the level of cleanliness of the water used but had a negative impact as far as the roof of the hammām is concerned. It became a dirty, unattended and poorly maintained part of the building.

- Some internal spaces of the building were painted, particularly beit al- harāra, by two to three layers of oil or acrylic paint; thus negatively affecting the texture of the walls and relevant structure balance.
- Some marble tiles were replaced by ceramics. Also some domes collapsed due to the lack of maintenance and proper restoration or unsound intervention (HAMMAM 2005- 2008).

Figure 4 Poor Quality Water Pipes Insensitively Introduced in the Hammām. (Source: Sibley, M- AHRC funded project: Historic Hammāms of North Africa©June 2007).
Even though no hammāms, in the traditional concept, were built - perhaps ever since the first half of the 20th century – it is evident that the currently in vogue “Moroccan” hammāms are spreading. They are even considered successful businesses in support of institutions specialized in health and/or beautification, such as health clubs, gyms, and hair dressing salons. Hammāms have also become a luxury facility in five-star hotels, such as the “Four Seasons” hotel. However, most of these “modern” hammāms lack the aesthetics of the traditional ones, with its space sequencing, architectural and decorative elements. They are now more of medical clinics for physical healing than places for spiritual entertainment and emotional serenity.

Dina Shehayyeb (HAMMAM 2005-2008) has carried out a valuable study on some of these hammāms in Cairo, known as Moroccan hammāms, mostly attached to hairdressing salons. The study highlighted that these are minimal facilities consisting sometimes of a steam room only, and lack the qualities of the traditional hammāms, in terms of spatial sequences, that enhances efficient temperature grading from cold to hot and vice-versa. They also lack the variety of architectural and space experiences found in the traditional baths. However, these new facilities provide individual private spaces and therefore the privacy required for women as a result of the fundamentalist religious interpretations that are of Wahabi origins.

There are two interrelated important factors that have contributed to the decay of the traditional Cairene hammāms. First, the popular hammām is an urban facility which is not found in villages and secondly the geographical movements of the population in Cairo, where upper and middle classes abandoned historical and popular areas and moved to recently-planned areas to have been replaced by new rural migrants moving to the city. Consequently, the hammām in popular areas lost its regular and well-off clients, due to their geographical

Figure 5 Inadequate Changes Inside the Bathing Spaces of the Hammām. (Source: Sibley, M- AHRC funded project: Historic Hammāms of North Africa©June 2007).
transfer to other areas. New rural migrants who are introduced to the hammām, do not have the cultural tradition of using this facility, and are not fully ready to defend its survival when necessary.

On the other hand, the middle and upper classes were not keen on the existence of the hammām in their new residential areas for reasons relevant to modernization attempts to which the country was exposed since the beginnings of the 19th century. However, the emergence of the Moroccan hammām three years ago specifically in Cairo, (since 2005 according to Dina Shehayyeb’s observations carried out in 2007) was mainly in the residential areas of the upper classes. This is similar to the known anthropological phenomenon of “the urban-rural rule and the reproduction of heritage”. This indicates that the city residents have forsaken a large part of their heritage, but not the whole of it even though they invented new forms, alternatives and sorts (Al-Johari, 2007).

The dynamics of heritage on the societal map have been a factor of strength and sustainability. Perhaps an illustrative example of that factor can be evident in observing what happens in the reproduction of heritage as regards to fashion and the emulation of classes of each other – fashion travels from upwards to downwards and vice versa. In the Egyptian countryside, young women tend to wear headscarves as a symbol of conservative Islamic behavior in the same way women in the city do city. They do not any longer wear galābeyas and tarha (traditional hair cover) as their mothers and grandmothers used to do (Abaza, 2007).

Considering the famous architect Hassan Fathi’s work, it is clear that serious attempts have been made at reproducing the heritage of conventional architecture. Inspired by the local heritage in order to create a new local architecture, his main motivation was to create solutions for housing problems for the poor in Upper Egypt. There was an urgent need to house those who have been harmed by the construction of the High Dam, those coming from the expansive migration process of the residents of Nubia and those being evacuated from old Gourna village. The experiment proved that local residents, especially in Gourna, were not accepting the new mud brick houses even though they were respectful of their architectural heritage that was more responsive to the their local environment in terms of construction materials, appropriate environmental design, and use of items and symbols of the local culture. Hassan Fathy architecture was however embraced by a well-off educated class. It maintained the beauties and originalities of such architecture in the houses it commissioned as holiday and leisure second homes. As a result of their choice, Hassan Fathi’s creation did not die away; it has become now a form of heritage that is being renewed by his followers whether in tourist environmental architecture or an idol to be transferred to rural agglomerations adjacent to some resorts like Tunis Resort nearby Fayoum.

Nowadays modern hammām has different urban connections than in the past; it is now separate from both the mosque and the sabīl -public fountain- (these three heritage structures are associated with water which used to be transferred manually or on the back of some animals, before the realization of modern infrastructure networks). Thus, it has become
more used in hotels, health clubs, gyms or hairdresser salons. The hammām is currently related more to beautification and health functions than to social or cultural needs as it used to be. Secondly, this new economic coalition between the hammām and the other activities is supported by another category of consumers that have substantial purchasing power. Thirdly, it is no longer an economic institution with religious commitments as it used to be, whether in application—the realization of the purity required for performing religious rituals, given that such purity can be fulfilled in most homes now—or financial dependence on endowment institutions such as awqāf, charity and others. It has been proved that it depended on these at least to attain sufficiency as the case used to be.

Discussion on the Reproduction of the Hammām:

Based on the aforementioned, the paper will give some suggestions and orientations that may help to regain the vitality of the intangible heritage of the hammām.

1) The economies of operation, restoration and maintenance of the hammām are evidently playing a major role in retaining its tangible and intangible heritage. Given that it is used to be dependent on certain religious, social and economic institutions, the need today is to define new relevant associations. Old associations are currently confined to maintain its heritage and renew its function as a result of social, economic and cultural change.

2) It is important to conduct necessary studies on ways to promote the hammām activity with open-mindedness without preconceived ideas regarding target groups. It may be best to start with a study of the social categories that are more prone to change in order to achieve quick outcomes that maintain the tangible heritage currently threatened by extinction. On the long run, this would help attract the other categories.

3) Hammām, whether in the past or present, depends on the support of certain social classes and professions. They control relevant sustainability dynamics. Thus, the social, cultural, economic and developmental study of those is essential for the determination of sustainability factors.

4) The technology for the operation of conventional hammāms needs to be modernized as far as methods of operation, maintenance, environmental performance, hydraulics, sanitation and restoration of such exclusive archeological building type. This requires more research and experimentation, particularly as regards sustainability, provision of energy and water, relation with the surrounding society; in addition to methods of restoration and maintenance, especially retaining the materials and techniques that proved successful in the traditional practices of the past.

Acknoweledgment

All Photographs in this paper were taken by Adham Bakry in June 2007 as part of the field work carried out with Dr Magda Sibley and Dr Fodil Fadli under the AHRC funded research project “The Historic Hammāms of North Africa: And their survival into the 21st century”. (Sibley, M-AHRC funded project: Historic Hammāms of North Africa © June 2007).
**References**

**Arabic References**


Ali Pasha Mubarak (1888) “Al khitat al maqriziyat”- Bulāq, Cairo, Egypt.


Ali Pasha Mubarak (1873) « Tadhkirat al mohandesiyn wa tabsserat al raghebiyn » Cairo- The Royal College- Cairo, Egypt.


Raymond, A. (1975), fsūl al ta‘rikh alijtima‘l ‘līl qāhera ‘al Uthmaniyya, translated by Zuhayr al Shayib, p. 120.


**References**


Dalila El Kerdany

Dalila ElKerdany is a practicing architect and professor of architecture at the Faculty of Engineering, Cairo University. She obtained her undergraduate studies, M.Sc. In Architecture, as well as Ph.D. in Architecture from Cairo University in the years 1979, 1986, 1992. During the years 1989-1992 she was a visiting fellow at the University of California at Berkeley. The Aga Khan Award for Architecture 2001 Cycle invited her to participate in the technical review team for the nominated projects from Turkey. She is involved in research as well as practice in the fields of conservation, heritage, and design. Ms. ElKerdany is a recipient of many competitions’ awards and actively involved in the architecture profession of Egypt. ElKerdany was a main researcher in two EU project, “HAMMAM: Aspects and Multidisciplinary Methodes of Research in the Mediterranean Region” (2005-2008), and “HERCOMANES”, Heritage Conservation and Management in Egypt and Syria of the 19th and 20th Centuries Architecture and Urbanism (2000-2003). Among her expertise in design is the rehabilitation of historic and valuable buildings. In this area her firm has undertaken the following projects: Nagui Museum (1989), Taha Hussein Museum (1990), Mohandes Bank Branch in the Faculty of Engineering Cairo University (1998), Hashad Theater in the Faculty of Agriculture Cairo University (1998), and the New Islamic Museum in the Citadel (under construction). She has been an editorial correspondent for the International Association for the Study of Traditional Environments “IASTE” since 1994. She is currently involved in the National Project for Documenting Egypt’s Cultural Heritage as an architecture expert for CULTNAT, the National Center for Cultural and Natural Heritage Documentation, Library of Alexandria. She can be contacted at dalila@link.net.
MONUMENTS OR FUNCTIONING BUILDINGS: LEGAL PROTECTION OVER FIVE CASE-STUDY HISTORIC HAMMĀMS IN THE MEDITERRANEAN

Alaa el Habashi

Abstract
Historic hammāms are not as frequented as they used to be. They are falling into an advanced state of disrepair and are located in dilapidated historic zones. In some cases, they are associated with bad reputations and socially unacceptable behaviours. Many historic hammāms' are therefore, being demolished to make use of their land plots. The few ones that have managed to still survive and operate, witness heavy modifications that not only diminish their historic values but also their operational efficiency. They are becoming rare, and therefore require legal protection either as a heritage building or as a historic monument. This relatively new protection is usually more concerned to preserve the physical existence of the building rather than to maintain its original function and social role. This paper is based on five case study hammāms' in five different countries, investigated as part of the EU funded HAMMAM project. It presents a comparison of the various protection frameworks of the five hammams, and explores the effects of such protection on their current status. It recommends establishing a coherent protection system that respects ethics of heritage conservation and emphasizes on the revitalization of the hammāms' social, financial and health roles in the society.

Keywords:
Historic hammāms; waqf; antiquities law; international heritage; heritage conservation.

Introduction
Hammāms represent a particular building type, as they rely on the use of abundant amount of water, this latter being considered as the most detrimental element to building system and materials. However, removing the water element from the historic hammams, or limiting its circulation, is similar to taking the soul out of a living body. Furthermore, the building fabric, particularly of the hot and warm areas of the hammām, separates two very different environmental conditions: the constantly humid and hot interior of the building, and the weather conditions of the exterior. The environmental variation between the interior and the exterior accelerates the rate of vapor condensation, and thus material disintegration, threatening the structural stability of the building. This requires a high rate of building monitoring and check-ups to prevent sudden and unexpected collapses.

During the HAMMAM research project, a group of multidisciplinary researchers including the author studied and analyzed specific hammāms in five different Mediterranean countries: Egypt, Turkey, Morocco, Syria, and Algeria. The five studied hammams can be...
categorized according their different system of legal protection as illustrated in table 1 that illustrates that the systems of protection fall into three categories:

I) The Waqf Preservation system.
II) Local Legal Protection System.
III) International Heritage Protection.

This research paper describes the level of protection each of these systems provides for historic hammāms and investigates how each system envisions the hammām building to be in the future. It focuses on how the protection systems influence the way the hammam building functions, whether it allows for bathing activities to take place or not, and, how they highlight the historic and artistic values of the building that need protection.

<table>
<thead>
<tr>
<th>Hammām</th>
<th>WAQF</th>
<th>Local Legal Protection</th>
<th>International</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Private</td>
<td>Protected zone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Antiquities</td>
<td>Antiquities</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Protected zone</td>
</tr>
<tr>
<td>1) Tanbali, Egypt</td>
<td>Waqf</td>
<td>-----</td>
<td>----- (nearby)</td>
</tr>
<tr>
<td>2) Şengül, Turkey</td>
<td>Waqf</td>
<td>-----</td>
<td>International</td>
</tr>
<tr>
<td>3) Saffarin, Morocco</td>
<td>Waqf</td>
<td>-----</td>
<td>International</td>
</tr>
<tr>
<td>4) Ammouna, Syria</td>
<td>Waqf</td>
<td>-----</td>
<td>International</td>
</tr>
<tr>
<td>5) Al-Gazl, Algeria</td>
<td>-----</td>
<td>Private</td>
<td>----- (to be)</td>
</tr>
</tbody>
</table>

Table 1: Type of Protection for Each of the Hammam Case Studies

**Waqf Preservation System**

Because the Waqf system is particular to Islamic cultures, and has been abolished or reconfigured in modern times it has received little research attention, especially on its relationship to the built environment. Its essential and fundamental role in preserving the built heritage of the Islamic historic cities has been overlooked and ignored. For the purpose of this paper, a brief explanation on the relationship of the waqf system with the preservation of cultural heritage is presented. This is crucial for understanding of the five case study hammāms, as four of them are administered through a waqf system.

The Waqf is a system that is based on pious endowments supporting perpetual charitable activities through the periodical revenues generated from fixed assets such as buildings. Its root goes back to the time of the Prophet and his companions, and was briefly described in the Qurān and the Prophet’s hadith (al-Khallaf, 1953). In fiqh, the waqf was interpreted and its principles were shaped. It is difficult to indicate when exactly the system was introduced as a matter to be judged upon in the Islamic Court, but we know that al-Khassaf, a judge in the Court of Baghdad during the 9th century A.D., wrote a manuscript where the system of waqf was legally structured. Al-Khassaf’s ahkām al-awqāf, sentences on waqf, was written in such a way to list the rights, benefits and duties of all the parties included in the system (al-Khassaf,
1904). Many manuscripts and books were written to modify al-Khassaf’s judgments if their applicability proved not suitable, and to add more judgments for the new legal cases that emerged. At the end of the nineteenth and the beginning of the twentieth century, when the Islamic State was subdivided into several political entities, a tendency to secularize internal matters, including issues on property ownership and waqf, prevailed. An extensive campaign of research took place attempting to put the waqf judgments into the shape of a secular law. These attempts utterly failed as there was nothing in the western laws, upon which local laws were shaped, that were similar or even parallel to waqf judgments. It is for that reason that, in the middle of the twentieth century, many countries of the Muslim World located the waqf system into shari’a Courts, courts that judges upon Islamic law, thus banning its development in secular contexts. In most of the Muslim countries, the waqf system is reshaped and totally reconfigured. It is generally given the role of managing religious internal matters, a task that the system never undertook before, and that replaced its previous role of a real-state institution that manages a significant amount of the wealth of the Islamic State. Moreover, some countries, such as Tunisia, abolished the waqf system in 1956 without proposing other alternatives that would manage and sustain the large number of its assets (Abu Nasr, 1987).

Since it was legally shaped as early as the ninth century, and being the responsible of sustaining perpetual charitable acts through fixed assets, the system developed tasks for the parties and the personnel involved in its framework to preserve those objects for the longest possible duration. In this aspect, the waqf can be considered as a system that deals essentially with the preservation of objects, since they were the bases of the charity, and the producers and/or receiver of cyclic revenues.

It is therefore important to understand how the waqf system managed the preservation and protection of its assets through a set of rules and principles. In order to do that, the author investigated a large number of books (similar to the one of al-Khassaf) to extract those principles which are related to the preservation of buildings, among which hammams fall. (Khallaf, 1953; Qadri, 1870’s and al-Sanhūri 1949) It is important to highlight that none of the consulted books, the principles related to the preservation of building assets were grouped in a specific chapter, or assigned to a specific party involved in the waqf system. Instead, those principles are usually scattered within the abundant number of regulations that are usually classified according to the responsibilities and rights of the different parties involved in the system, i.e. the founder, the beneficiaries, the overseer, and others. This fact indicates that all parties were concerned because they are beneficiaries.

The research process resulted in compiling a long list of preservation principles, which were clearly categorized according to the type of waqf buildings subject for preservation. For example, the waqf preservation methodologies and concepts in preserving a mosque were fundamentally different than those shaped to preserve other public or residential buildings. In this paper the principles which would have been directed to preserving the hammāms, as public buildings are presented. In order to prevent confusion between terminologies the terms related to preservation activities are
Monuments or Functioning Buildings: Legal Protection over Five Case-Study Historic Hammâms in the Mediterranean

ALAA EL HABASHI

• All buildings subject or subjected to a waqf system should survive and should function in perpetuity in order to continuously support a charity.

• The beneficiaries should preserve (hifâz) the building, to maintain it (siyâna) in a good condition, but never modify it (ta‘dîl). Use but not to abuse.

• The main responsibility of the waqf-overseer is to assure the good condition of the building by employing the revenues of the waqf to sponsor the necessary conservation measures (al-‘imâra al-darûriyya).

• A “consumed maintenance” (maramma mustahlaka) is the all maintenance works that entail irreversible interventions, e.g. re-plastering (tâtyin or tagsîs).

• A waqf building is considered ruined (takharrab), if it is no longer in use, regardless of the physical condition of its structure and materials.

• If the revenues were insufficient to sponsor the necessary, or sometimes refered to as being “obligatory,” maintenance (al-‘imâra al-darûriyya), the building can be rented away, and can be used during its rental period to serve other functions than the original one. The rental could last for a specific duration (not to extend two revenue cycles) until all the necessary conservation work would be undertaken, then the building should return to serve its original function (Behrens-Abouseif, 1994: 156-158).

• The function (wâzîfa) of the hammâm building can be temporarily substituted to guarantee utilization (manfa‘a).

• Waqf preservation principles allow appropriate development, admitting technological evolution, if all the parties involved in the waqf system approve the associated changes.

• The preservation of the hammâm building is not the goal in the waqf system but a medium through which revenues would be perpetually maintained or increased to sustain charity.

• The preservation of a hammâm should assure, in the first place, a social interaction between various social classes, and sustain prospective charity.

• Under a waqf system, the preservation of a hammâm building, should be supported by the system, to assure autonomy, and thus to prevent external interferences and controls.

Local Legal Protection

Each of the five case study hammâms investigated in this study, is located in a different country, thus, subject to a set of a different set of local laws. The laws and orders influencing hammams in all the five cases could be one or more of the following ones: City Planning
Laws; Laws for the Protection of Historic Zones and/or Cities; Laws for the Protection and the Preservation of Heritage; Laws for the Protection of Antiquity; Laws and/or Orders for the Restoration of Ruined and Collapsing Structured; Laws of Property Confiscation for Public Benefit; Laws and/or Orders on Regulations on land-use; and others depending on each case study hammāms.

As shown in Table 1, Hammāms al-Tanbali, and Bab al-Bahr of Cairo and Şengül of Ankara are all protected under the local antiquities laws. Hammām Ammuna of Damascus is filed for monument classification, thus will be soon under the protection of the Syrian Antiquities law. As for hammām Souq al-Ghazl of Constantine, and hammām Saffarin of Fez, they are both located in protected zones, thus subject to the local laws for the protection of historic areas/cities. All the case study hammāms are under heritage protection, and this is considered to be the most powerful protection that a building can acquire in all the five countries. For this reason, the various local laws for the protection of Antiquities and/or historic areas in each of the case study countries are compared, and the implications on the hammāms are investigated. The analysis is however confined to those legal articles which list the local criteria for the selection of a monument, and those which identify buffer zones of protection around each selected monument, or protected area.

**Antiquities Protection of Hammām al-Tanbali, Egypt**

The current Egyptian Antiquities Law was issued in 1983. Being a registered monument, hammām Tanbali is subjected to such law, which is based on a series of previous laws that started to be issued around the year 1912. With very few modifications on increasing the penalties for antiquities looting, and on expanding the span of time required for an object to be registered, the current law provides a similar type of protection to those at the beginning of the twentieth century. In its first article, the 1983 Egyptian Antiquities Law determines an age of 100 years for an object to be subject for legal protection if this object meets other historic and artistic values. With the romanticism movement towards ruins and antiquities that started at the middle of the nineteenth century and that reached most influence in the early years of the twentieth century, historic registered buildings were perceived as “monuments,” and distinguished, or rather isolated, from their surrounding urban fabric. In fact, most of the buildings that existed in the immediate surrounding of a given monument were considered as "parasites," and were subjected to legal “expropriation.” A zone around every monument where no development, construction or activities could take place was identified, despite the existence of important historic buildings that fell into these zones. The law states that “...the competent minister in cultural affairs may issue a decree to determine the beautifying lines around public antiquities and archaeological sites,... and which might “extend to 3 Kms distance in uninhabited areas or to the distance the Authority determines in a way to protect the environment of the antiquities.”
Figure 1: Hammām al-Tanbali in a Continuously Changing Urban Context. (Source: Author)

The consequences of applying such type of protection on hammām al-Tanbali are apparent today in different aspects. Since the function of the building is not of any value, it was not necessary to preserve it, and thus, hammām al-Tanbali is now locked without any sort of legal protection for its different particular spaces. It is not in the Antiquities Authorities interest to preserve the function, but on the contrary, it would be better if the activities are ceased so that the deterioration of the historic built fabric could be controlled. Certainly this approach is a misconception that was based on the romanticism of the nineteenth century, but proved with the time that it is utterly wrong. It is now understood that the best way to preserve the building is to use it appropriately. Unfortunately, the notion did not still find its way into the Egyptian legal protection system.

The second apparent result from applying the Antiquities law on hammam al-Tanbali is the large number of empty plots that surrounds the western and the southern sides of the building, including the vast property that was once occupied by the traditional furnace of the hammam (mustawqīd). The vacant plots are the results of implementing the legal buffer zones that are applying to the surrounding areas of the hammam despite the pressure for land to develop much needed residential buildings. These plots are left empty, and have become a dumping ground for the residents of the surrounding buildings and the venue for small manufacturing activities.

The third consequence of applying the law of antiquities protection on hammām al-Tanbali is the focus on the valuable historic architectural
elements in the building and the apparent disregard to all other secondary elements. The marble columns of the changing room (maslakh) are of high value along with the marble mosaic floors, whereas all other elements are secondary, thus of no particular interest to the Antiquities Department. This attitude can be detected in the reports of the Supreme Council of Antiquities officials submitted regularly to the Ministry of Culture. Furthermore, the status of the collapsing domes or the accumulated garbage on the roof or in the interior spaces of the hammâm, are rarely mentioned in these reports.

Heritage Protection of Hammâm Şengül in Ankara, Turkey

The current law of the protection of heritage buildings in Turkey dates back to 1983 (Tanaka; Özsunay, and Sibel Özel). The law has a long historic background of development which started in 1906. Since that time, Turkish antiques have been considered as state properties. In 1924, a new law was issued to protect historic sites in addition to archaeological remains (Vernoit, 1997). In the current 1983’s law, the idea of protection does not simply mean safeguarding objects considered cultural property from destruction. The notion of protection is also used to denote protecting the owner’s right to control cultural property. According to Article 5 of the current law, the Turkish state is the sole owner of cultural objects found in the country. (Law No. 2863) According to Özel, who, in her recent publication, points out the present legal situation and stresses the shortcomings of the old statutes and urges new legislation, “what is often at stake in cultural property debates (e.g. disputes over repatriation) is where and by whom such objects should be protected, and who can decide where such objects are protected and displayed” (Sibel Özel, 1998:2). This provokes rivalry between different claimants for ownership of cultural property at various levels.

Heritage Protection of Hammâm Şengül Şengül in Ankara, Turkey

This rivalry is apparent in the case of Şengül hammâm, where the responsibility of protection is shared by the Waqf administration, the overseer, and the Antiquities Department, the legal responsible body from the Ministry of Culture point of views. It is for that reason that recent efforts undertaken by the Waqf to conserve and restore the hammam are always criticized by the Ministry of Culture and vice versa.

Zone Protection around Hammâm Saffarin, Morocco

Unlike the two case study hammâms of Cairo and Ankara, hammam Saffarin of Fez is not a protected building. However, it is still under heritage protection because it is located in a registered world heritage city. The Moroccan law for heritage protection was issued in 1980, and was updated in 1994 to become the “Law for the protection of heritage and traditional crafts.” (Dahir, 1980). Under this law, Fez is registered as a “Cultural Site”, which is a site that, according to the law,” witnesses the work of human being and the work common between human being and nature, including the archaeological sites which have national and/or international value.” It also includes “historic and traditional ensembles,” which are groups of built or not built or separated or attached states from cities or villages or districts, whose grouping are of national or international value. Moroccan
law identifies a zone of protection surrounding “historic and traditional ensembles,” which reaches 25 meters in the case of Fez. Unlike the Egyptian Antiquities law, the Moroccan’s does not state however any buffer zone surrounding individual monuments.

Hammām Saffarin is then protected as an entity within the city fabric, but not as an individual monument. The type of legal protection from the Antiquities point of view, concerns solely its façades onto the public spaces, and the type of activities that is taking place in the building. Perhaps the immediate surrounding development is controlled under the heritage legal protection as well, but the extent of such protection is not clearly stated in the Law for Heritage Protection, and could be detailed in other related legislations; i.e. planning. It is important to note that under such protection and unlike the case of Cairo and Ankara, there is no consideration for how the internal spaces are used or conserved, and/or transformed.

Prospective Protection Zone around hammām Ammuna, Damascus- Syria

Hammām Ammuna is situated in the district of ‘Uqayba in Damascus. The hammām itself is not yet under any heritage protection. It is not registered as a protected building, nor does it fall within an identified heritage ensemble. According to a high official in the Department of Old Damascus City, the hammām Ammuna is being considered for monument’s registration, and the district of ‘Uqbiyya is currently under revision to be designated as a protected zone. (al-Barry, 2007) A brief description on the implications of both type of future protection is provided below.

In 1950’s the Syrian Government started to register historic buildings, but had no law of protection to embrace listed buildings. In 1978 the UNESCO registered the Old City of Damascus in its protection list as a world heritage city. After 1984 selected buildings and districts from outside the wall were registered under a local antiquities law that was issued in 1963. A group of local experts selected the borders of each of the selected districts. In the year 2000, the Syrian antiquities law was updated. The latest law states that all remains of previous civilizations or all of previous generations that are 200 years old or more are to be considered for protection. Identifying the object’s age as one of the selection criteria appears only in the Egyptian and the Syrian laws among the five case studies. However, the Egyptian law limits the age of an object to only 100 years. The Syrian case seems to be more flexible as it offers the possibility to register newer objects under special circumstances and special considerations. In Syria, like in Turkey, heritage
buildings are considered a State property unless private ownership is proved. Similar to the Egyptian law, the Syrian’s law identifies a “buffer zone,” where development is not authorized. The concerned local authorities are responsible for identifying the areas of the buffer zones according to cases. The Syrian antiquities law limits the use of privately owned monuments to their original function whereas authorities can determine other functions for cultural purposes.

If hammām Ammuna is registered as a monument, the bathing activities might not be ceased, as was the case in hammām al-Tanbali of Egypt. Also, the waqf, as an overseer of the hammām, would continue to administer the building. A buffer zone would then be identified around the building were no development would be allowed. This buffer zone might reach the extreme case of hammām Qarama’ni which has become a free standing structure in a garden in downtown Damascus, deprived from its historic urban context which was an old market that has been fairly recently demolished.

If the ‘Uqayba district, where hammām Ammuna is located, is designated as a protected historic area, a whole system of powers and implementation procedures would be introduced and will be similar to this applying to the Old Damascus world heritage area. In this case, the Antiquities Department which operates under the Ministry of Culture, would have an advisory authority, and the Ministry of Municipalities would possess the implementation means. The Documentation and Studies Department, which belongs to the Municipality, would have a crucial role in revising the conservation specifications and following up the implementation of the conservation works. It would also revise the infrastructure of the area including the hard and soft landscaping for the public squares and streets. This Department would also revise and evaluate requests to restore or develop any of the private buildings in the historic zone, and would issue permission to undertake the work if the proposal is approved. It would also monitor the implementation process to make sure that is in accordance with the approved plans. An example of this type of involvement is apparent in Bayt Jabri, one of the first historic houses located in Old Damascus that is currently being used as restaurant. Finally, this Department would coordinate with all other governmental departments, including the Antiquities Department and the Awqaf, to restore their buildings. An example of this case is Bayt al-‘Azam, which, with the collaboration of the Antiquities Department, was turned into an ethnographic museum. The Department would attempt, as it does in the Old Damascus zone, to enforce to undertake the conservation and restoration works using traditional building techniques and materials.

Figure 4: Hammām Qarama’ni as it Survives Today in Damascus, 2007. (Source: Author).
Protection Zone around Hammām Souq al-Ghazl, Algeria

Hammām Souq al-Ghazl of Algeria is not a registered monument. However, being in the old city of Constantine, one of the most picturesque sites that is protected as a heritage zone, the hammam falls under the 1988 Algerian law for the “protection of cultural heritage”. This law defines the cultural heritage as being all products of civilization until the present time, and divides them into three categories: mobile cultural goods, immobile cultural goods, and intangible cultural goods. It gives the State the rights to confiscate the immobile cultural goods (historic monuments, archaeological sites, and urban or rural ensembles). Urban or rural ensembles under protection are exemplified by: Kasbah, ksours, villages and traditional agglomerations presenting historic, architectural, artistic, or traditional interest. The law identifies a “buffer zone of 200 meters” around the historic monuments that is called the “visibility field,” or “champs de visibilité”. This zone should be applied around the rock of Constantine. Unlike the Turkish and the Syrian laws which encourage the confiscation of cultural heritage properties, the Algerian law draws different regulations to deal with waqf or private buildings, or any other cultural goods.

In December 2003, the Minister of Cultural Heritage issued administrative regulations, and explanations of the 1988 Algerian law, where he underlines that there is no such a thing that is called “shameful history,” and all the past traces which were responsible to made Algerians as they currently are, are worthy of protection, preservation, exhibition, and transmission at their best states to the future generations. The Minister was pointing in his notion to colonial remains, which were not appreciated by some extremists, and thus were subjects of constant assaults.
is part of the historic zone of Constantine. Being a private building, the current owner has not problem to constantly changing the interior, by painting the marble columns using different colours, an activity that would be considered as criminal if it was taking place in hammām al-Tanbali or in hammām Şengül of Cairo and Ankara, both registered as monuments.

**International Protection**

Two of the five hammām cases are under surveillance of an international heritage organization, the UNESCO. Historic Cairo and Fez are two cities which are registered in the World Heritage List, therefore, all modifications and conservation interventions that are taking place within the urban fabric of the two registered historic cities are monitored. In many instances, when the conservation interventions are not of international qualities, the UNESCO intervenes to criticize and impose its own working specifications and perspectives.

The most important documents that specify the permitted levels of interventions are international charters, which started to be issued since 1904, though what is called Recommendations of the Madrid Conference. The Venice Charter of 1964, despite being almost half a century old, is still the most recognized document that conservation projects should abide to. In this charter, “conservation”, and “restoration” are permitted levels, each with different set of specifications and regulations. The Burra Charter of 1979 emphasizes the means by which cultural sites are managed. Both charters brought the preservation activities to an international level, and thus provide basic background for international organization, such as UNESCO, to regulate the “international heritage.” The international preservation movement has been going recently through some recognizable phases. In the 1980’s and early 90’s an apparent phase of heritage preservation based on the different types of heritage surfaced. This is obvious when different charters were approved for the preservation of towns and districts, another for archaeological sites, and a third for historic gardens. From the late 1990’s onwards, the local context became a much more important consideration in detailing the means of preservation than the type of the heritage subject for conservation. The Nara Document and the Declaration of San Antonio are two examples of this current on-going movement that can be described as contextualization of heritage (Getty, 2007). Through those two charters, the “authenticity” of heritage started to acquire qualities which are merely local.

Most of those current issued charters agree on certain code, ethics, and standards that govern the preservation field in the World. The following are some codes of ethics and standards of practice based on these charters:

1- Knowing the object; its history and its context,
2- Emphasizing on minimum intervention,
3- Emphasizing on the selection of appropriate technology
4- Emphasizing on reversibility
5- Respecting all historical phases the object witnessed
6- Emphasizing on maintenance in early phases of remedies design / interventions
7- Establishing a management plan for conservation, upkeep, and reuse.
The different levels of intervention that the international preservation charters permit can be exemplified in terms of Doing nothing, maintenance, conservation, repair, anastylosis, restoration, rehabilitation, modifications (transfer and re-use). It is, however, understood that the minimum intervention is the most preferred option, an attitude that in most of the cases is in contradiction with local prospects and the needs of the owners whose main concern is to find means for development, and financial gains.

Cultural manifestations both tangible and intangible are often considered to belong to two collective or communal entities “near” and “far,” i.e. “local heritage” of a particular community and “world heritage”. While as “world heritage” cultural manifestations are accessible to a much wider community, it restricts the use or, more precisely, the commodification of cultural property by the community nearby as “its” own resource. Objects labeled “cultural property” are implicated in general in the constitution of a nation or an ethnicity. Through this notion hammams can be considered as a manifestation of a world heritage, where the Roman thermae were the seed of a building that developed in consideration of the specificities and the special characters of local communities.

**Conclusion**

This paper presented the different types of heritage protection each of the case study hammams is subject to. Hammām al-Tanbali of Cairo and hammām Saffarin of Fez are under protection of three different legal systems (waqf, local, and international). While hammām Şengül of Ankara is under the protection of waqf and local legal systems, hammām Souq al-Gazl of Constantine is subject of the protection of two different local legal systems. Although hammām Ammuna of Damascus is only administered through the waqf system, but the prospects of designating the building and its surrounding areas in the local heritage list will soon put it under other systems of protection. This paper has highlighted that that not all heritage protection systems have the same prospects and visions on how the historic hammām would be in the future, on the contrary there are fundamental differences between the various systems resulting in conflicts between them. For example, the paper demonstrated that the primary focus of the waqf is to preserve the working framework of the hammām in order to guarantee perpetual revenue, whereas international conservation charters are more concerned with the authenticity concealed into the built fabric. The economic framework of the hammam is none of these charters’ considerations unless the “waqf” system is considered in the future on the international list of intangible world heritage.

This paper recommends that the concerned authorities and institutions responsible for the preservation of hammāms should consider new concepts of protection that accepts that the historic hammām building with its systems and materials cannot but sustained without it being in direct contact with water and operating under different levels of heat and humidity. However this requires regular monitoring of the building in order to prevent its deterioration and guarantee its adequate performance for the longest possible duration of time. There is also the need for concepts of protection that not only respect ethics and charters of heritage
conservation, but also take into consideration the necessity to revitalize the hammāms with its social, financial and health roles in the society.

The paper has explored a new type of problem that hammāms are facing in historic cities, a problem of inadequate heritage protection. Further investigations are needed to include a larger sample of countries in order to develop a comprehensive overview of the protection of hammams as heritage buildings. The results presented in this paper are relevant to five countries around the Mediterranean basin. There might be other cases outside the scope of this study (for example the case of the hammāms in Yemen) which would provide different perspectives and results. It is important to highlight the significance of studying historic documents that list and give details of the historic framework under which hammāms were managed. For example the researcher Brigitte Marino has been working on this research with the IFPO. (Marino, 2008) There is also an urgent need to conduct a comprehensive comparative study between the heritage protection laws in the various countries where hammāms exist so that the implications of their applications would be explored. In this paper a first attempt has been made that is still at a preliminary stage. Finally research into the traditional building techniques, materials and finishing materials of historic hammāms is needed in order to base new conservation interventions on readapting such vernacular materials and techniques using appropriate contemporary technologies. There are already some efforts that have been made in such a research domain, (el-Habashi, 2008) but the scope needs to be widened.

References


Maqrīzī, Ahmad ibn ‘Ali (1364-1442). Al-maw’iz wa al-i’tibār bi-zikr al-khitat wa al-athār, known as al-khitat
Monuments or Functioning Buildings: Legal Protection over Five Case-Study Historic Hammāms in the Mediterranean

Alaa el Habashi

Alaa el-Habashi is associate professor of architecture at the Menoafia University, Egypt. He received his Masters and Ph.D. degrees in historic preservation from the University of Pennsylvania in 1994 and 2001 respectively. He received his Bachelor of Science degree in architecture from Alexandria University-Egypt in 1988. His Ph.D. work placed emphasis on the analysis of the work of the Comité de Conservation des Monuments de l’Art Arabe in Cairo, and investigates the mutuality between “preservation” and social, economic, and political affairs. The Ford Foundation, and ARCE granted me a fellowship to conduct archival research in Egypt. Dr. el-Habashi has an intensive experience in historic experience and is involved in wide spectrum of conservation projects in different countries, including Austria, Bahrain, Egypt, United Kingdom, Yemen, among others. In addition to his main work at Menoafia University he teaches historic preservation, conservation and management of heritage sites in several universities throughout Egypt. Currently, he is on the advisory committees of several masters and Ph.D. dissertations. His research output exceeds 20 publications and public lectures in the area of conservation. He can be reached at alaa.elhabashi@gmail.com


Qadri, Muhammad (1870’s). Kitāb qanūn al-‘ādl wa al-insāf li-qiṣādah ‘ala mushkišt al-aqwāf, the edition consulted is published by al-Amiriyya, 1909, Cairo, Egypt.


----------------------------

Alaa el Habashi
THE ARCHITECTURE OF THE HAMMĀMS OF FEZ, MOROCCO

Kamal Raftani and Hassan Radoine

Abstract
Morocco is one of the countries with the highest record of traditional living hammāms. Despite this fact, this key civic building remains poorly studied by researchers and professionals. This paper presents a research into Moroccan hammāms and shed some light on the formation and evolution of the traditional urban space. It focuses on the hammāms of the world heritage city of Fez – also referred to as Medina of Fez – and presents an analysis of the architecture of this building type and its relationship with its urban environment. It investigates the historic context of the hammām, its origin and the different influences that have contributed in shaping its architectural identity. It also assesses its current state and discusses its elements of sustainability.

Keywords:
Medina, traditional hammām, architecture, bathing spaces, heritage.

Introduction
The hammām is one key social and hygiene facility in the Mediterranean region. Despite its importance, particularly in Morocco, as a living tradition since the roman period, it is seldom mentioned in the Moroccan historical records. Few researches and studies have been recently conducted on this category of urban buildings. Most Moroccan historic urban centres had exquisite hammāms, and the old city of Fez had known its first ones during the Idrissid dynasty (8th – 10th C.E). Being the city of current 120 functioning hammāms (Raftani, Moutawakil, & Karim, 2005), the hammāms of Fez play an important role in the development of the Medina’s urban and social fabric.

The urban expansion of the Medina of Fez throughout history was due primarily to the abundance of water that was supplied by sophisticated networks of water-springs and rivers. The ingenious hydraulic network of the Medina dates back to the 8th century—it connected all the buildings of the city to the potable water, river and sewer canals. The distribution of water through the dense and
twisted alleys and neighbourhoods of the Medina created an interlaced infrastructure of underground canals, which resulted in its large number of public and private fountains and springs providing focal points in its magnificent private and public courtyards and gardens. Thus, among other factors this environmental condition formed an ideal setting for the spread of the hammams in the different neighbourhoods of Fez. According to an outstanding primary source, Rawd al-Qirtas (Ibn Abi Zar’, 14th Century), the number of hammams in Fez reached 93 during the Almohad dynasty (12th – 13th century C.E).

There are currently 5000 traditional hammams operating in Morocco (Statistics giving by the Moroccan National Federation of the Associations of Owners and Operators of Traditional Hammams). The city of Fez – consisting of the Medina and the Ville Nouvelle – has more than 120 functioning hammams amongst which 30 are historic and located inside the Medina. This makes Morocco one of the countries with the highest record of living traditional hammams that are deemed as essential urban facilities. Therefore, the Medina of Fez has generated a unique culture of public bathing that unquestionably has made this city an attractive one by being the hub of the most nationally famous spas.

### Origin and Evolution of Hammam

The architecture of the Islamic hammams, especially those of the Middle East, was influenced by that of the baths belonging to earlier civilizations (Greeks, Romans, Byzantines and so forth). What is the architecture of Moroccan hammams? What influenced their architectural and functional identity?

Some recent archaeological excavations on the site of Volubilis, revealed the existence of an early Islamic settlement to the West of the walled Roman city. The only standing architectural evidence in this Islamic medieval site is a small structure of an Idrissid hammam (Fig. 1). This archaeological hammam is most probably a precursor of the hammams of Fez. It shows visual similarities with the Roman baths of Volubilis, which are located nearby (Fig. 2).

An analysis of the hammams of Fez reveals the apparent influence of the existing Roman public bath or thermae. Such influence is noticeable at the following levels: the hammam’s layout as a linear spatial organization (Fig. 3); the same progression of three rooms with different micro-climatic ambiances with the cold room (frigidarium), the warm room (tepidarium) and the hot room (calidarium); the central heating system (hypocaust); and the canalization system (El-Habashi, 2006).

The systematic presence of three bathing spaces with varying temperatures, retained from the early existing Roman baths, can be considered as a typical characteristic of the Moroccan hammams – and, more generally, of the hammams of North Africa – in contrast with the hammams of the Middle East where the cold room has almost disappeared, e.g., Egyptian and Turkish hammams. However, the layout of this oldest Idrissid hammam at the time of first Muslim settlements in Morocco presents a spatial distinction from the previous Roman existing baths. Such distinction is highly traceable in an Almohad hammam in the site of the medina.
of Qsar-Sghir. This hammām has, for instance, an axial plan with parallel-juxtaposed rooms (Redman, 1986). Henri Terrase also confirms this layout in his study of the Marinid hammām of Mukhfiyya in Fez (Terrasse, 1950). Although these archaeological evidences of ancient baths in Morocco are providing some key information on the first hammāms, their evolution is hard to be assessed through one technique or one layout. In the actual existing hammāms, the linear configuration is widely applied.

The different variations that can be observed between the Roman bath and the early Islamic hammām in Morocco hint at the changing of character of the latter throughout history. For example, the Moroccan hammām had a modest appearance versus the monumental character of the Roman public bath, and the Roman cold plunge pool was removed from it probably in response to religious requirements such as washing in running pure water. Thus, the Moroccans inherited the tradition of public bathing from the first Roman settlements in the country and adapted them to the Islamic bathing habits and traditions.

Figure 1: The Remaining Structures of the Idrissid Hammām of Volubiis, Morocco (Photo by Kamal Raftani – November 2006).
The Medina offers a cohesive urban structure where the hammāms are still functioning within its neighbourhoods. The hammāms are an essential component of the intricate urban fabric of the old city, which has remained almost unaltered for centuries. To gain a deeper understanding of these functioning historic buildings, it is important to understand how these were located in the traditional urban fabric of Fez.

The urban layout of the Medina could not be understood without the distinction between two levels of its urban organization: the strategic and local. The strategic consisted of its macro urban forms and infrastructure. The local consisted of its residential, commercial, and production neighbourhoods.

**Hammām Location in the Medina Layout**

Figure 2: Roman Baths of Gallienus in Volubilis, Morocco (Photo by Kamal Raftani – November 2006).
The Medina covers currently an area of approximately 800 acres, and surrounded by 25 kilometres of historic walls. At the strategic level, it encompasses four urban centres: Andalus, Qarawiyin, and Bu’inaniya in the old Fez, and Fes-al-Jadid. These urban centres are connected with intricate pedestrian circulation networks. For the case of the old Fez, the two key thoroughfares, Tal’a Kbira and Tal’a Sghira, structure the whole of its urban fabric. These thoroughfares are connected to main arteries that are linked to 13 historic gateways. This hierarchical structure of circulation eases the access to the different parts of the Medina. The major urban facilities of Fez are located near these urban axes and include: caravanserais, madrassas, mosques, hammāms, and so forth.

The local level of organization is presented through intertwined neighbourhoods that constitute the urban districts. The Medina of Fez encompasses 19 urban districts following the macro urban layout. These urban districts consist of residential, commercial, and industrial neighbourhoods. The gradual transition from the strategic level to the local one of these districts is made through multiple urban functions and forms: roads, gates, hubs, boundaries, and a particular urban and site disposition. Neighbourhoods at the local level were quintessential urban elements in the building of the organic urban framework of the Medina of Fez. The hammāms take several locations within this urban structure, which define subsequently their function and size. The largest hammāms of the Medina are located in the vicinity of the major urban hubs like that of the Qarawiyin, and the small ones in the centres of residential neighbourhoods. Hammāms are often located in such a way to avoid causing smoke nuisance (from their furnace chimney) to their neighbouring buildings. They are often juxtaposed to public bakeries in order to optimize the use of heat, and minimize thereafter the smoke nuisance.

Although they seem similar, certain hammāms were intended to serve specific groups of people or specific urban areas. For example, the tanners and other craft workers were prohibited to bath in any public hammāms except the ones designated for them not to disturb other residents with dirt and odours that result out of their work. Thus, some hammāms were named after the type of craft its customers practiced. The Saffarin hammām is an example of a hammām that used to serve a targeted clientele: the craftsmen of the Saffarin square (Saffarin meaning metal smith workers).

At present, the historic city of Fez is equipped
with 44 traditional hammams – 30 of them are historic buildings (Fig.4), 32 public latrines, and more than 70 public fountains (1). This confirms the role that it has been played for centuries as a centre of abundant water and good hygiene.

Architecture of the Hammām

In addition to its central role as a place of social gathering and ritual cleansing, and a centre for healthcare and hygiene, the hammām as a building has evolved and acquired a significant architectural and urban value inside the city. The hammām became, therefore, a major Islamic building type and an essential feature of the Islamic city.

Hammām Architecture and Urban Setting

The hammām of the Medina of Fez occupies a distinctive position in the neighbourhood as a key architectural element. Often hidden by façades of adjacent shops and workshops, the hammam building is well integrated within its urban fabric. This contrasts with the freestanding and exposed position that some hammāms have particularly in Turkey. Accordingly, the architecture of the hammāms of Fez is far from being monumental. It embraces the scale of its neighbouring buildings and is not seen immediately from outside. The physical volume and size of the hammām reveals itself only if one gets to the top of one of the neighbouring terraces.

Figure 4: Hammāms of the Medina of Fez: Localization Map (Source: ADER-Fès – November 2006).
The architecture of the hammām roof terrace is very noticeable with its chimneys, pierced vaults and domes. In many cases the urban location is dictated by the direction of prevailing winds that help in directing the hammām’s furnace smoke away from neighbouring buildings. The roof is usually accessible to the hammām staff and is used to dry towels. Some hammāms keep their terraces inaccessible to protect the privacy of the bathing spaces and the neighbouring houses.

The other interesting observation is that most hammāms in Fez are located next to mosques and their minarets. Hygiene and prayer are joined to fulfill the rituals of Islam in an un-separated way. Thus, the minaret is not forcibly a landmark only to mosques but also to other urban facilities such as the hammām.

The Entrance to the Hammam
The entrance to the hammām of Fez is usually a bent one and L-shaped, which permits entering discreetly to the undressing room while preserving the total privacy of the bathers. This bent entrance is typical to the hammāms of Morocco and North Africa in particular, but can also be found in some Middle Eastern hammāms for example the Cairo hammāms. However, this is not the case of some hammāms of Syria and Turkey where the entrance is more direct. In addition, the doorway of the hammām of Fez is not extravagantly decorated as in the case of some madrassa(s) or mosques. It is often an arched door that is leading to an obscure and discreet corridor (Fig. 5). From the street, the hammām door is noticeable more through the smell of steam and soap escaping from its entrance. In the case of the Saffarin hammām the entrance door is arched like the ones of its neighbouring urban facilities such as the Saffarin madrassa and the Quarawiyin library. However, it remains rather discreet and humble compared to the entrances of other public buildings.

The Spatial Organization and Interior of the Hammām
The hammām of Fez follows a simple linear layout that is typical of the North African hammām model (Fig: 6) and dissimilar central organization.
typical of the Middle Eastern model. This is probably due to the fact that Morocco, unlike other North Africa countries, remained out of the influence of the Ottoman Empire. This linear spatial organization, inherited from the Roman style, was established as a specific layout in the early Islamic period in Morocco. This layout has been constantly maintained throughout centuries. The sequential progression from the main entrance to the core room is following the gradual increase of temperature. From a functional point of view, the inner spaces of the hammām can be divided into three categories: the reception area or undressing/resting room, the bathing spaces for washing, and the furnace area for the heating of the hammām (Fig: 7).

The spatial organization of the hammām of Fez displays a single structure. Apart from the Saffarin hammām, none of the hammāms of Fez presents a double structure (one for men and one for women). The single structure is used by both men and women, bathing at different times of the day.

The Undressing Room
The undressing room is generally the most important space in the hammāms of Fez in terms of proportions. It is also the most decorated area inside the hammām in comparison with the modest and sober appearance of the internal bathing spaces (Fig: 8).

The undressing room is the equivalent of the Roman Apodyterium called locally in Fez the Guelssa according to the local dialect. It is also known as Mashlah or Maslakh in Egypt and Syria respectively. The undressing room consists generally of a central square space that is usually roofed with a large pierced decorated dome and subsidiary spaces on its three sides, which accommodate the dressing/undressing areas, and where benches are arranged for the bathers’ use. The cashier’s office and hammām reception area are also located within the undressing space. In addition, the undressing room accommodates sometimes a mezzanine level as well as storage areas.
The Bathing Spaces
The bathing spaces in the hammām of Fez follow a typical transition from the cold room to the hot room where the basin of hot water is located. The washing areas reproduce therefore a linear axial organization that is specific to the Moroccan hammām. The architecture of the bathing spaces is not based on spectacular monumental domed rooms as in other models in the Islamic world. It is rather composed of series of vaulted spaces sometimes intercepted with a dome. The bathing spaces inside the hammāms of Fez are composed of a long and narrow rectangular rooms roofed by barrel vaults.

The cold room, the Roman Frigidarium—El-Barrani in the local dialect of Fez—can be considered as an intermediate space between the passive area (the undressing room) and the heated spaces (the warm and hot rooms). As far as proportions are concerned, the cold room is usually smaller than the two other bathing spaces. The cold room is generally equipped with a cold-water basin and a subsidiary space accommodating the toilets (Fig: 9).

The warm room corresponds to the Roman Tepidarium, El-wasti in the local dialect of Fez. It is generally the biggest of the three washing rooms. The typical layout of the warm room of the hammām of Fez consists of a central large area, generally square-shaped. It is also covered by a dome, and extended by two smaller vaulted spaces on the opposite sides (Fig: 10). The latter are sometimes equipped with small spaces called Mtahra, providing more privacy to the bathers. This typical layout can be observed, with minor variations, in the hammāms of Mukhtiyya, El-Kaddan, Ibn Abbad, Ain Allu and Guerniz.

The hot room corresponds to the Roman Calidarium or Caldarium, and is locally known as Ed-dakhli. The hot room of the hammām of Fez displays a long rectangular plan adjacent to the furnace and covered by a barrel vault. The hot room is generally equipped with one or more Mtahra (private washing niches) and a wall basin for hot water, locally called Barma, where the hot water arriving directly from the furnace provides the bathing spaces with steam.

Figure 8: Undressing Room of Saffarin Hammām in the Medina of Fez (Photo by Aisha Darwish – November 2006).
The Furnace
The furnace, locally named Farnachi, is usually located at the back of the hammām on the opposite side to the main entrance and displays an irregular plan with a separate entrance. The furnace accommodates large brass cauldrons, once made of copper, where the water is heated by using natural recycled materials as fuel such as wood shavings and olive pits. Unlike other countries where the traditional system of heating has almost disappeared, the hammāms of Fez, like those in all Morocco, are still using the hypocaust system for heating the bathing spaces, reminiscent of the Roman public baths. The hot room is heated by the smoke (from the fire in the furnace) that flows beneath its floor and is then extracted through four chimneys incorporated in the four corners of the hot room (Fig: 11).

Features and Decoration
The hammāms of Fez are known by their modest and sober architecture in comparison with those of the Middle Eastern historic cities. For instance, the well decorated doorways of the Egyptian hammāms and the elaborated dome architecture of the bathing spaces of the Turkish hammāms are not found in the hammāms of Fez.

However, there are some exceptions, for example hammām Saffarin has a richly decorated undressing room or Guelsa: carved

Figure 9: Cold Room of Mukhfiyya Hammām in the Medina of Fez (Photo by John Bouillot – November 2006).

Figure 10: Warm Room of Mukhfiyya Hammām in the Medina of Fez (Photo by Jean Bouillot – November 2006).
plaster on the dome and the arches (Fig: 12), traditional ceramic tiles or zellij on the walls, carved cedar wood furniture, and a decorated wall-fountain. However, the aesthetic qualities of the hammāms of Fez are not limited to the decorations in the undressing room as the beauty of the overall architectural volumetric composition is related to their serene harmony.

The aesthetics of the traditional hammams in Morocco have influenced widely the conception of new villas in many cities such as Marrakech. The intricate vaulted and domed spaces provide a feeling of rest and tranquillity around the element of water. Another aspect of the hammāms architecture that has been directly borrowed in the contemporary architecture is the technique of wall rendering using Tadlakt, an ancient lime based render with egg yolk additives used for providing smooth wall surfaces that have a high resistance to humidity. The render is applied as a wall finish using a technique of polishing the wall surface with pebbles and soap to give a smooth and shiny appearance as well as a good protection from humidity.

Figure 11: Furnace of Saffarin Hammām in the Medina of Fez (Photo by Kamal Raftani – November 2006).

Figure 12: Decorated Dome Covering the Undressing Room of Saffarin Hammām in the Medina of Fez (Photo by Kamal Raftani – November 2006).
Another architectural feature of the hammāms of Fez is the star shaped openings on domes and vaults that allow the daylight to filter through the steam into the bathing spaces, giving these a cosmological dimension. These qualities have also inspired contemporary architects in Morocco.

Conclusion

This paper has presented the hammāms of Fez and highlighted their characteristics reminiscent of the small Roman baths or balnea found in Volubilis. It has discussed how these buildings are different from the public baths in other historic cities of North Africa and the Middle East. The architecture of the different spaces has been presented from inside out and vice versa as well as the relationship of this building type to its urban context. The hammām as a vernacular building type incorporates many lessons of sustainability that can inform contemporary architectural projects.

References


Note

(1) These data are from the Geographical Information System of ADER-Fez, a government organization in charge of the preservation and the regeneration of the Medina of Fez.

Kamal Raftani

Kamal Raftani is a Moroccan Architect-Planner. His primary interests include regeneration of historic built environment, restoration and reuse of historical monuments of Moroccan architecture, Islamic public baths in Mediterranean historic cities, and community development and urban regeneration of Moroccan heritage cities. In July 2001, he joined ADER-Fes, a government organization in charge of the preservation and the regeneration of the world heritage city of Fez. He has been for five years the head of the Studies Department of ADER-Fes and is currently occupying the position of its Director of Development. He has seven years relevant experience as project coordinator in several development projects in the preservation program of Fez, among which the “Fez Medina Rehabilitation Project” funded by the World Bank between 2000 and 2005 and the “Artisan & Fez Medina Project” funded by the Millennium Challenge Corporation and aiming to rehabilitate and renovate major historic handicraft infrastructures inside the medina of Fez (2008 – 2013). Between 2005 and 2008, he has been local team leader in an EU-Mediterranean research project on traditional bath houses in six Mediterranean countries (HAMMAM project). His works within the HAMMAM project include architectural typologies of Mediterranean hammāms and assessment of risks to the hammām from an architectural point of view.

Hassan Radoine

Hassan Radoine is currently the Chairman of Architectural Engineering Department at the College
of Engineering, University of Sharjah. He holds a PhD in Architecture, University of Pennsylvania as a US Fulbright scholar (2001-2006); MSc. in Architecture/ Historic Preservation, University of Pennsylvania (2003); MPhil in Islamic Architecture from the Prince of Wales Institute of Architecture (1997); and a Diploma of Architect-Planner, the National School of Architecture in Rabat (1993). He has been one of the key players in the preservation program of Fez (ADER-Fes). He served this program as a Director of Community Development Unit created by the World Bank and the Moroccan Government. Bridging between professional practice and academic education, Dr. Radoine is a dynamic professional with a record of national and international achievements in the fields of architecture and city planning. He organized several international conferences such as the last IFIAD 2008 (International Forum on Islamic Architecture and Design) at University of Sharjah. He lectured and organized several professional workshops on Conservation, planning and Development with national and international institutions. Dr. Radoine has been an active member-founder or member in several national and International NGOs.
THE REUSE OF A HAMMĀM AS A PUBLIC SERVICES CENTRE--HAMMĀM SUQ EL GHEZAL; TOWARDS A SUSTAINABLE FUTURE

Samira Debache--Benzagouta

Abstract
The hammam in Islamic countries still occupies a very important urban and social place in the heart of the inhabitants. Even though, it is not as used as it used to be, it is considered as a monument; which is part of the Islamic heritage. People assume that “the hammām will not disappear socially. It also constitutes an intangible heritage; customs and traditions which still persist until today, as is the hammām. It is still related to festivals; it is engraved and fixed in the residents’ memory. This traditional building used to be a central place for social life and cultural heritage with complex urban and societal relations. Besides its cultural heritage values, the hammām is an integrative part of the locals’ life as well as an example of architectural heritage. Nowadays, although it still has a ‘warm’ place in the heart of the inhabitants, the hammām seems to have lost its function and activities. This paper presents scenarios for the adaptive reuse of hammam Suq El Ghezal as a public service centre in Constantine. It also outlines strategies for adapting the hammām features to contemporary Islamic life in North Africa.

Keywords:
Hammām; heritage; sustainable future; clients; re-us

Introduction
Historical background of the city of Constantine

Often called Cirta, Constantine is a real window to Algerian history. Constantine is situated in North-East Algeria, slightly inland, at about 80 kilometers from the Mediterranean coast. This ancient city is spectacularly set upon a stone mountain overlooking the Rhumel Gorges, some 200 meters below, and at an altitude of 640 metres above sea level (Fig 1). Until today, the deep ravine runs right through the city, creating a dramatic effect and many beautiful sites. Several bridges and a viaduct cross the ravine (Fig 2). Founded by the Carthaginians, Constantine was originally settled by Phoenician migrants and renamed in the 4th century of the Roman Empire, who rebuilt the city to its original splendour after it had been levied. It was then conquered by the Arabs in the 7th century, receiving the name of Quasantinah. The coming of Arabs did not change the city structures very much, but Arabic houses and buildings are added.

Since 1529, it was discontinuously part of the
Ottoman Empire and ruled by a Turkish Bey (Governor). Salah Bey who ruled the city between 1770-1792, greatly embellished it and built the majority of the Islamic buildings, still visible today (Fig 3 and 4). Spatial and Historical Analysis of hammām Suq El Ghezal

The old parts of the medina are dominated by narrow, winding thoroughfares and traditional buildings. The medina is surrounded by the modern city, with its French colonial style buildings, as well as newer quarters with modern Algerian buildings. The Casbah, a Roman fortress, the 18th century Mosque of Sidi el-Kattani and a 19th century Bey Palace are Constantine’s most important landmarks. And the city itself bears so many conflicting architectural and urbanistic styles. French buildings constitute the facades of main streets hiding the inner original traditional fabric and buildings. The traditional Arab medina has narrow faceless unadorned streets with no windows on the street and only small doors that open into the most opulently ornamented courtyards. The medina public spaces have been imprinted mainly during the colonial period and the main breaks which have introduced European urban style inside the medina created differentiated quarters.
Figure 2: Longest Stone Bridge in the World, 1200m, Sidi Rached (Source: Laboratoire LVP 2008).

Figure 3: Bey Palace, (Ottoman Building), Constantine, (Source: Author, 2008).

Figure 4: Courtyard of Bey Palace, Constantine, (Source: Author, 2008).
Spatial and Historical Analysis of Hammām Suq El Ghezal

Hammām Suq El Ghezal is one of the most popular Turkish baths of Constantine. It is located in an important historic area of the medina; the commercial Suq El Tadjar district.

Hammām Suq al-Ghezal was built between 1827 and 1835, during the Ottoman period. It was completed just two years before the French took over in 1837. It is a modest but relatively well maintained hammām. The hammām is located on a back alley, in the heart of the medina, close to the main suq and the Ahmed Bey Palace, which is one of the major remaining Ottoman buildings in Constantine (Fig 5).

The hammām is also adjacent to a large trade alley which is famous for the jewellers’ workshops; known as the Rassif area. Nowadays, the Suq El Tadjar neighbourhood represents the heart of the Medina in specific and the Rock of Constantine in general. It provides several urban functions to the medina from being a cultural and tourist attraction, an industrial and services activities pole, a residential area and a spiritual centre.

Similarly to other hammāms in the Maghreb region, in North Africa, and the Western countries, the spatial organization of the bathing spaces of hammām Suq El Ghezal is not as complex as it is the case in the hammāms of the Mashreq (Middle-East) countries. It has a simple organization based on a linear progression of rooms (Fig 6) with varying temperatures: the sitting or rest room (Fig 7A and 7B), the cold room (Fig 8A), the warm room and the hot room (Fig 8B).
Figure 6: Plans and Sections of Hammām Suq El Ghezal. (Source: Laboratoire LVP 2006).

Figures 7a and 7b: Hammām Suq El Ghezal, Undressing Room. (Source: Author, 2006).
The Reuse of a Hammām as a Public Services Centre--Hammām Suq El Ghezal; Towards a Sustainable Future

SAMIRA DEBACHE --BENZAGOUTA

Fig 8A and 8B Hammam Suq El Ghezal Hot and Cold Room. (Source: N. Refay. Hammām Project, 2007).

Hammam Suq El Ghezal Today

It became obvious through the HAMMAM research project that the traditional hammāms in the medina are still very important as the local residents perceive them as important landmarks. Some of them are still being used, for health, hygiene and beautification reasons. They have also become an important traditional act which constitutes the intangible heritage. These reasons emphasize the socio-cultural meaning and role of the hammām as an important sign of the users’ culture. It is a monument at both tangible and intangible dimensions.

The hammām operates seven days a week throughout the whole year. The women time slots are during the morning from 08.00 to 13.00, while the men time slots are from 14.00 to 18.00. However, it is facing a multitude of difficulties and is struggling to keep its importance in the medina.

The local residents aspire to reactivate it, re-introduce former activities which have disappeared such as marriage celebration, 40th day after giving birth etc. and introduce new contemporary ones. They would also like to reinforce its former meanings; such as the symbol of solidarity, collectiveness, and neighbourhood support and an important informal information point.

However, the habits of the local residents have changed; the hammam is not considered anymore as an important social meeting place, as people have other places to meet. Clients have less time to spend in the hammām, so new practices are appearing, such as taking a quick bath before going shopping in the Medina.

The hammām with its traditional meaning and form is under the threat of disappearance. It is being replaced by modern smaller baths with “douches” meaning private cubicles with showers. Furthermore, the lack of control in hygiene and cleanliness constitute another threat to the survival of the hammām facility. The introduction of contemporary private bathrooms, as well as new sport centres with sauna and steam rooms put additional pressure on the traditional use of the hammām.

One of the main problems is that the hammām as a business is no longer seen as profitable. Therefore hammām managers do not invest in the maintenance and renovation of these structures, putting at risk the buildings themselves with some being are under the threat of collapsing. In addition to all the reasons listed above (i.e. hygiene, non adequate opening hours especially for women, the appearance of new modern hammāms with more facilities) another reason is the change that has occurred in the society in relation to the perception of the human body. According to some new religious interpretations (social field work on hammām
Suq El Ghezal, laboratoire LVP, 2007) the use of hammāms is forbidden by religion because of the possibility of exposing one’s body. It was argued that religious law required that women be covered from navel to knee when among other women; Eventually that was the only condition where they were permitted the usage of the hammām.

The practice of the hammām confronted the “Ulemas” with the sensitive question of physical nakedness. While limiting access for women, who could go only for valid purposes (birth, sickness), it was also necessary to ensure the sexes were strictly segregated: male and females bathers had to wear full-length loincloths. The doctrine, established by the 3rd/9th century, was hammered home in later centuries by jurists of all schools, for it enabled them to speak out on believers’ sexuality and to define moral order in keeping with the Shari’a. (Benkheira, 2007).

But things are changing and the hammām is gaining a new significance. It represents the elements of the Islamo-Arabic tradition that needs to be rediscovered and re-appropriated. Furthermore, the hammām is considered as a necessary supporting residential amenity, as it acts as a set-up for different and varied activities. It is used as a “social club” by women especially in the week ends; and as a dormitory for some seasonal workers. Hence, the activities going on in any place have a strong impact on its image and values attached to it. The hammām is also seen as a potential basis for the social coherence with it being a major central space/building in the neighbourhood.

The necessity to safeguard this historic traditional building in its urban context becomes essential. Hence, to provide a sustainable future development for the hammām, it is very important to activate and launch the restoration process of this building. It is essential to revive the traditional social activities which used to take place in every space –outside and inside- of the hammām. People are curious about their past and tradition, and clean baths would attract as much local people, men and women, as they would attract tourists and foreigners (Atassi, 2007).

Different methods should be applied to revitalize the hammām to its former practices for hygiene and health. New acceptable additional services could be introduced, as it is the case in newly built hammāms, but it is essential to keep prices at reach for the local users, in order to sustain its socio-cultural and economic activities. This improvement must be at the request of the local community and not only as an investment in tourism development.

Maintaining the economic diversity of the clientele is very important in order to sustain the use of the hammām by a large spectrum of the population living in the Medina. The privileged location of hammām Suq El Ghezal in the heart of the Medina, could enhance the visibility and the accessibility of the hammām. The old historical medina had the chance to preserve its original dense fabric through centuries and it is important to keep the social and economic structure of the historic quarters that are facing gentrification at many levels (Atassi, 2007, p15).

It became evident that the hammām is not only a space with architectural features, but a microcosm with its own typical social life, including norms, values and social rules that
are typical for the space called hammām (Dumreicher, 2007). This reflects partly the social importance in the neighbourhood, but it is also a place demanding its specific social rules. You come to the hammām as a person with your own societal background, and how to use this space has its specific rules that generate social practices. It is a space with inherent contradictions: a semi public space with many very discrete and hidden characteristics. A place where the “secret, the “not outspoken” has its stake – but the rule of the hammām on the other hand, is publicly known, so that people are able to deal with this very specific societal institution. Also the reputation of the hammām is continuously under discussion and the rumours of the place and the ongoing life in the hammām is narrated amongst clients and non clients (Dumreicher, 2007). It shows that the hammām is a place where the transition from traditional settings towards modernity and a contemporary way of life can be observed: the tradition of a religious place for cleanliness, social coherence is still visible in hammām Suq El Ghezal (Dumreicher, 2007).

For all the preceding reasons, it appears evident and necessary to open up different perspectives for the future of this traditional historic building for a sustainable use with contemporary standards and modern facilities. The aim is to develop future scenarios according to the parameters of strong sustainability.

Previous sociological research on the hammāms of Constantine (Dumreicher, 2007) perceived the future of the city of the Rock and the hammam as an establishment of an ongoing multiple, alternative, and sustainable scenario-building process. It proposes and investigates a variety of “what-if” options. These options would range from business as usual, to various preservation options, to preservation plus sustainability, to the more radical unsustainable proposals, but always with an accompanying analysis or systems-modelling. This will help indicate, in the case of the latter, what the direct consequences would be in the implementation of such a radical approach, (Dumreicher, 2007).

**Hammām Future Concepts**

The hammām still has a meaning for the culture and tradition; some rituals have been kept and are still celebrated. However, the majority of them are simply preserved by nostalgia. People highlight the socio-cultural meaning of the hammām, as a social anchor within the neighbourhood and its positive impact on health, but they do not use it anymore. Although they want to keep the traditional “historic” hammam, they look for new hammams with more features and better hygienic conditions. Using a historic hammāms needs a certain attitude and expressive behaviour. Going to bath in the historic hammām relates to the social class (therefore still have a need to go there for societal reasons) or appreciating its culture and sanitary value.

The hammām and its neighbourhood could not be disconnected. The synthesis obtained through this study, suggests that emphasis should be focused on behavioural studies of Suq El Ghezal users and local residents. As seen previously, the hammām is a very specific building with special comfort and hygiene norms. The first step should therefore be to ensure the minimum requirements for a safer environment. Even though there are no emergence of general rules about human
spatial behaviour to help draw up guidelines for designing new hammāms and restoring the old ones, behavioural studies have signalled a whole series of problems which could not be neglected and ignored if we want to re-use the hammām properly and to have a better picture of it, as a dynamic setting. It also provided some methods, which are as follow:

• Observation of people behaviours in places
• Questionnaires, and interviews of people about their impressions, feelings,
• Observation of the ‘traces’ of activities, signs and other subtle points which constitute significant indices about the manner people really use and evaluate places.
• Analysis of written and pictorial material that has not been produced consciously to evaluate environments, for example travel descriptions, newspaper reports, etc. Such material tend to show how people use environments and how they feel about them.

Indeed, by having a full picture of people’s interaction with their environments, the designer will be better equipped for his contribution in the making of a more sustainable environment.

As discussed above, to aim for specific suggestions for a living traditional hammām with contemporary standards (i.e. Suq El Ghezal) is to trans-pass the present and go from past to future, because the hammām had a very important and privileged place in the heart of users in the past. At the present time, things and habits have changed, people are not using the hammām as they used to, it is why this actual period has to be trans-placed straight to the future but with contemporary standards, to fulfil people’s needs.

Nowadays, hammām Suq El Ghezal has to be considered as a precursor for reversal of faith in belonging to the neighbourhood, since it is seen as a right. People in Constantine are very much related to the hammām as in other cities of the Mediterranean countries. Injecting sustainability elements (solar water heating, reduce heat loss and consumption, easy accessibility by tram loop etc...) will help this hammām attract people and be an oasis of space, a recreation in a very dense urban fabric, it will act as an acupuncture and a starting point for enhancing the whole medina (Levine, 2007). Combining traditional and craft man-ship with scientific knowledge, successful conservation can be achieved. This will lead to a sustainable hammām activity.

We are sticking to the proto-sustainable (the whole Rock works 100% on renewable energies) historic medina system (Levine 2007). Promote Constantine as an endangered specimen of cities and a world heritage site is the aim and target to raise the new image of both the hammām Suq El Ghezal and its neighbourhood; an ideal hammām and an attractive place, a participating element in the urban development plan using adequate tools to reach people’s concepts.

Conclusion

The hammām has to be looked at as a place for both tangible and intangible cultural heritage. It is a carrier of a collective memory; even if someone has never used a hammām, she or he still has an opinion about it and is part of the common Islamo-Arabic “story telling” about this historical institution. Undoubtedly, there is a common understanding of the hammām as an
important cultural value specially for the older generation. For them, the hammām is part of their value system and they can argue why they find it attractive to go there regularly, from its architecture to its specific rituals.

This is, unfortunately not the case for younger generations. They fail to be or become an integral part of the value system. These potential carriers of change – the young intellectuals – see it as a place that had a value for their parents and grandparents, but they often refuse the hammām as a place for themselves and cannot see it as in coordination with their own lives. These carriers of change have developed new value systems, but also new standards for negotiations concerning hygiene, health, architectural standards and services.

The hammām is part of a set of places that have evolved over time and guarantee the liveability of the Islamic Mediterranean city: the public fountain, the public bakery, the coranic-school, the library, the hammām. Among further research questions is how to make hammam Suq El Ghezal a pioneer for other hammāms in the Medina?

More attention and new actions are dealt with such as putting in a new project called "Plan permanent de sauvegarde" (Plan of Permanent Safeguard) of the Medina, where buildings and functions are preserved and rehabilitated. These actions are included into a long list of projects called: Projets de métropolisation de la ville (City Metropolisation Projects), which again enhance participatory system, involve the Medina inhabitants in decision-making and the expansion of protected perimeter. The idea is to work towards a sustainable hammāms with zero emission, local re-sourcing, no toxic material and renewable energy hygiene according to international standards.

In order to keep public interest for the hammām, a dialogue must be kept open by multiplying conferences, exhibitions, presentations, and "awareness campaigns". The experts and general public have to increase their awareness of the importance of the hammām. The future of the Medina is in its history, and the future of the hammām is in its history too.

References


Grangaud, I. (2004). La ville imprenable – une histoire sociale de Constantine au 18e siècle, Constantine,
The Reuse of a Hammām as a Public Services Centre—Hammām Suq El Ghezal; Towards a Sustainable Future

Samira Debache – Benzagouta

Samira Debache – Benzagouta is the Director of the Research Laboratory “Villes & Patrimoine at the University of Constantine Algeria. She graduated with the bachelor of Architecture from the same university. She Received her Ph.D. from the University of Constantine Algeria in 2004 and her investigation involved exploring the problems of noise in high rise buildings. Dr. Samira holds an M.Phil degree in architecture from the University of Leeds where she investigated mass housing production and processes with a focus on Algeria. Her recent interest covers several topics underlying the area of heritage conservation. She can be contacted at debachesamira@yahoo.fr.

Média-Plus.
Transformation, exploring new approaches to
participation in development. Zed Books, London,
United Kingdom.

Série – n°17, ouvrage collectif, Le patrimoine culturel
immatériel – les enjeux, les problématiques, les
pratiques – Babal, Maison des cultures du Monde.

Laboratoire Villes et Patrimoine, (2007). Social and
urban research on hammāms in the Medina of
Constantine, periodic reports and deliverable 20 ;
Project title: Hammam, Aspects and Multidisciplinary
Methods of Analysis for the Mediterranean Region
2005-2008, 6th Framework Programme Specific
Targeted Research Projects (STREP) FP6.

Regulations,WPQ, Project title: ammām, Aspects
and Multidisciplinary Methods of Analysis for the
Mediterranean Region 2005-2008, 6th Framework
Programme Specific Targeted Research Projects
(STREP) FP6.

background information of the hammam in Ankara
December 2006. Project title: Hammam, Aspects
and Multidisciplinary Methods of Analysis for the
Mediterranean Region 2005-2008, 6th Framework
Programme Specific Targeted Research Projects
(STREP) FP6.

Européenne: architecture et formation urbaine
à Constantine au XIXe siècle.” Revue du Monde
Musulman et de la Méditerranée 73-74, pp. 280- 294.

médinas nord-Algeriennes entre ruines et projets,
in Maghreb, architecture urbanisme – patrimoine,

Raymond, A. (2002). Les caractéristiques d’une
ville arabe moyenne au XVIII siècle: le cas de
Constantine in Arab cities in the Ottoman Period,
THE ARCHITECTURE OF PUBLIC BATHS OF TUNISIA: A TYPOLOGICAL ANALYSIS

Ines Bouraoui

Abstract
The Punic, Roman, Byzantine and Islamic civilizations contributed with their architectural knowledge to the development of different public baths design. Based on previous historical work on the collective baths in the Mediterranean basin, and in particular Tunisia, this study aims to explore and analyse the hammāms (Islamic public baths) of Tunisia. This study uses a semantic and representative approach to help define the components of the historic public bath, and to reveal its integration modes in the urban fabric of the medina, and eventually represent the functional diagrams of bathing practices. It clarifies how the functioning mode of the bath is in direct relation with the evolution of the society (its lifestyle, its culture and its own paradigms) and classifies these building types according to a semantic division of the architectural places. Hence and in order to analyze the hammām spaces, a matrix of incidence [An analytical tool which quantifies the relations existing between the spaces of the same building] has been used. As a result of this analysis, three typologies of Tunisian hammāms have been identified.

Keywords:
Hammāms, North Africa, bathing, culture, practice, Tunisia.

Introduction
Tunisia has received several civilizations on its land. The original people of Tunisia and North Africa in general were the Berbers well before the arrival of conquering civilisation such as the Punic, the Romans, Byzantine and finally the Muslims.

Each of these civilizations appropriated the Tunisian territory by settling down in its own way and responding to its needs by using its own specific architecture and form of urban settlement. Further to the vestiges that they bequeathed to us, one can notice that the urban and architectural reality is different from one era to another. This was due to the influence of a culture dominated by a change of religion which brings with it new lifestyles, traditions and practices.

However, cities which were the product of these successive civilizations (Punic, Roman, Byzantine or Muslim) respond to the same needs of shelter, protection and hygiene. For this last need, public baths were designed and developed and continued to be an important urban amenity changing its character and
practice at different historic periods.

Identification of the Bathing Architecture in Tunisia

Located in a strategic site of the Mediterranean basin, Tunisia has been sought after since the antiquity for its geographical territory, its climate and its landscape which have contributed to shape its deep cultural identity. An attempt to record the durability and modification of the public bath space has been carried out using a chronological analysis of the architectural and urban phenomena followed by the study of common urban amenities.

We identified and represented the typical systems of the urban facilities architecture in Tunisia, located in space and time, in order to identify the architectural systems of public baths in North Africa, and their categories as illustrated in figure 1.

Figure 1: The System of the Tunisian Urban Architecture through Various Civilisations. (Source: Author).
Chronological Evolution of the Collective Bath in The Mediterranean

Public baths constituted one of the major facilities of the city. On the architectural dimension they were considered as landmarks because of their massive scale and their complex spatial organization. They were considered as an essential centre for the life of the city inhabitants. It is useful, in the context of this study, to go back in time and investigates the genesis of this building type and its evolution according to its geographical and historical contexts.

Specification of the Public Baths in North Africa

Bathing Reality in the Maghreb Countries

North Africa was populated at first by Berber nomadic tribes well before the establishment of the foreign colonies of Punic, Romans, Byzantine and Muslims. The architecture of public bathing facilities was specific to each of these civilizations; it not only absorbed features from its predecessors’ history but was also adapted to the local culture. There have been variations in the architecture of thermal baths in all the Mediterranean Basin, including North Africa since the Punic and the Byzantine eras.

The integration of the Maghreb to the Muslim world provoked a major transition in the architecture of public baths due to the change in bathing practices. Public baths or hammāms in Islamic cities (or medinas) are important facilities, but not considered anymore as landmark buildings in the city. Their status was downgraded to a subordinate position (bath of mosque, bath of district, bath of madrassa). They became secondary facilities located within the various quarters of the urban fabric, providing social and hygienic functions. Their architecture was affected by a number of changes such as the disappearance of the cold water pools, the replacement of the frigidarium by a large undressing room and the limitation of the hot sector in a single room. The big establishments of the polycentric roman city, with their monumentality and their multiplicity of functions definitively disappeared in the hammām buildings.

Definition of the Concept and the Representation of the Collective Bath

Public baths of medieval Arab-Islamic era were recommended for their hygienic, purifying and therapeutic virtues. Beyond their function, they represented simultaneously a place of care, sacredness and social interaction. It is a central urban facility that is generally located in most cases on the main axis of the medina, adjacent to a mosque. The entrance gate to historic hammāms in the medina of Tunis is indicated by the coloured green and red stripes decorations. Unlike the Roman monumental baths, the hammāms have evolved towards different proportions between the reception hall / undressing and the bathing spaces. Generally two distinctive large areas are found: the undressing/changing room and the bathing rooms. The usual succession of rooms with gradual increase in temperature, reminiscent of Roman baths, is maintained in the Tunisian Islamic baths.
### Identification of Hammâms to Support the Analysis

A list of Islamic public baths in Tunisia has been established. The development of the corpus was made from the listing of hammâms among which a selection was made of those located inside the medinas and villages. Although, some buildings are part of our taxonomy, unfortunately they will not be included in this study because of the lack of complete and adequate documentation.

#### Table 1 Hammâm Yûssuf Sâhib al-Tâbaa in the Medina of Tunis: The Components of the Tunisian Public Bath (Source: Author, 2008).

<table>
<thead>
<tr>
<th>Name</th>
<th>Characterization</th>
<th>Function plan</th>
<th>The Hammâm in the Medina</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hammâm Yûssuf Sâhib al-Tâbaa</td>
<td>Skîfa, hallway al-Mahras, The room of undressing and rest.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bit el bârêda, one or several rooms of transition, modest spaces provided with latrines.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bit eddâfia, it is the first warm room, where the washing and bathing take place, it is warmed by contiguity.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Bit esskhûna, it is the warm room.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Figure 2 Localization of the Studied Baths in the Tunisian Territory. (Source: Author).
## Table 2: The Corpus of Hammâms: Inventory and Localization of Baths. (Source: Author).

<table>
<thead>
<tr>
<th>Arab - Islamic Baths</th>
<th>Dating</th>
<th>Surface</th>
<th>Situation</th>
<th>Setting Up</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hammâm Yûssuf Sâhib al -Tâbaa</td>
<td>XVIII</td>
<td>983</td>
<td>Quartier Bab swika - Tunis</td>
<td>The hammâm is situated on the meeting of Sidi Al Alwi’s street and The Sidi shiha street</td>
</tr>
<tr>
<td>Hammâm al -Dahab</td>
<td>XVI</td>
<td>196</td>
<td>Quartier Bab swika - Tunis</td>
<td>Is situated in front of the mosque, it was built on a sloping ground</td>
</tr>
<tr>
<td>Hammâm Sidi -Khlaf</td>
<td>XVI</td>
<td>98</td>
<td>Médina de Tunis</td>
<td></td>
</tr>
<tr>
<td>Hammâm des teinturiers</td>
<td></td>
<td>340</td>
<td>Médina de Tunis Rue des teinturiers</td>
<td></td>
</tr>
<tr>
<td>Hammâm al -Khachân</td>
<td>?</td>
<td>550</td>
<td>Médina de Tunis El Kachachin</td>
<td>It opens on the souk of bookshops</td>
</tr>
<tr>
<td>Hammâm de la Noria</td>
<td></td>
<td></td>
<td>Médina de Tunis</td>
<td></td>
</tr>
<tr>
<td>Hammâm Souk el Grana</td>
<td>IX</td>
<td></td>
<td>Médina de Tunis</td>
<td></td>
</tr>
<tr>
<td>Hammâm de Mahdiya</td>
<td></td>
<td></td>
<td>Médina de Mahdiya</td>
<td></td>
</tr>
<tr>
<td>Hammâm Essouk</td>
<td></td>
<td></td>
<td>Zaghouan</td>
<td></td>
</tr>
<tr>
<td>Hammâm Sidi Abdelali</td>
<td></td>
<td></td>
<td>Sliman</td>
<td></td>
</tr>
<tr>
<td>Hammâm Beni Khiar</td>
<td></td>
<td></td>
<td>Beni Khiar</td>
<td></td>
</tr>
<tr>
<td>Hammâm Shabou Trabelsia</td>
<td></td>
<td></td>
<td>Soliman</td>
<td></td>
</tr>
<tr>
<td>Hammâm Hammamet</td>
<td></td>
<td></td>
<td>Médina Hammamet</td>
<td></td>
</tr>
</tbody>
</table>

## Table 3: Classification of the Permanent Constituents in the Hammâms. (Source: Author).

<table>
<thead>
<tr>
<th>Components</th>
<th>H1</th>
<th>H2</th>
<th>H3</th>
<th>H4</th>
<th>H5</th>
<th>H6</th>
<th>H7</th>
<th>H8</th>
<th>H9</th>
<th>H10</th>
<th>H11</th>
<th>H12</th>
<th>H13</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architectural Spaces</td>
<td>1</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>11</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Variants</td>
<td>C1</td>
<td>C1</td>
<td>C1</td>
<td>C1</td>
<td>C1</td>
<td>C2</td>
<td>C1</td>
<td>C1</td>
<td>C1</td>
<td>C1</td>
<td>C4</td>
<td>C3</td>
<td>C1</td>
</tr>
</tbody>
</table>

Analytical Decomposition of the Bath for the Exploration and Classification of its Constituents

Through the semantic and systematic analytical decomposition of the bath structures, a first classification is identified. This classification concerns the various public baths by considering them as architectural spaces and sub spaces, they are the physical conformations defined by their nomination. The matrix of incidence has been applied to the corpus of selected hammāms. This matrix is from the theory of decomposable systems of Simon Herbert developed in 1969 (Le Moigne, 1994: 248).

Analysis of the Hammāms
From an analytical approach, the consideration of the architectural spaces is through physical observable facts. These facts are defined through the distinction between the configurations of the inhabitable environment and the configuration of the solid volumes. This is revealed by the interrelations of the interfaces;
i.e. the existence of several openings allows higher exchange between spaces. Hence, the analysis is empirical then quantifiable.

Table 4: Example of Application of the Matrix of Incidence. (Source: Author).

- The component (2) distances itself by the number of relations, it is the nucleus of the dry sector which it articulates with the wet sector.

<table>
<thead>
<tr>
<th>Code</th>
<th>Components</th>
<th>Number Relations</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Shiff</td>
<td>2</td>
</tr>
<tr>
<td>2</td>
<td>Mahnias</td>
<td>4</td>
</tr>
<tr>
<td>3</td>
<td>Mahnias</td>
<td>1</td>
</tr>
<tr>
<td>4</td>
<td>Mahnias</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>Sas</td>
<td>3</td>
</tr>
<tr>
<td>6</td>
<td>Bit</td>
<td>1</td>
</tr>
<tr>
<td>7</td>
<td>Bit al-Bada</td>
<td>2</td>
</tr>
<tr>
<td>8</td>
<td>Bit al-Bada</td>
<td>3</td>
</tr>
<tr>
<td>9</td>
<td>Bit al-Bada</td>
<td>3</td>
</tr>
<tr>
<td>10</td>
<td>Madras</td>
<td>1</td>
</tr>
<tr>
<td>11</td>
<td>Bit al-Buda</td>
<td>1</td>
</tr>
<tr>
<td>12</td>
<td>Madras</td>
<td>1</td>
</tr>
<tr>
<td>13</td>
<td>Bit al-Buda</td>
<td>1</td>
</tr>
</tbody>
</table>

- There is no relation, spaces are taken away and present no interface.

- Weak interaction, spaces are adjoining and the interface which connects them contains a single bay realized by a window.

- Average Interaction, spaces are adjoining, the common interface presents a single bay, a door.

- Strong interaction, spaces are adjoining, the common interface presents several bays: a door and a window or more.
**Tunisian Hammāms Typologies**

On all the studied hammams, we notice the existence of constants in the spatial composition of the building. The spaces (1, 2, 4, 5, 7) relating to = (Skifa, Mahrēs, Bit Eddēfia, Bit El Bērda, Bit Esskhouna) are the elementary components of the Tunisian hammam.

Other added spaces of secondary functions are: (3, 6, 8, 9), but they are strictly and successively bound to the first ones (2, 4, 5). The mode of movement of the user refers to a single category of buildings with retrograde itinerary: the user arrives in Bit Esskhouna, turns back and go through the bath by the other way, on crossing various rooms up to the mahrēs. The itinerary is made by going through the elementary components (1, 2, 4, 5, 7) in this direction: 1--2--4--5--7. However, there is a variety in the organization of the constituent (6, Mathras) in the itinerary of the user.

The study of these classes carried out by the use of the matrix of incidence, which takes into account the hammāms’ spatial components and their relationship to each other has helped to define the systems of organization. This analysis has revealed the following:

**Figure 5 : Typologies of Hammāms in Tunisia.** (Source: Author).

Firstly, at the level of the system of organization, we noticed (figure 6):

- The use of polygonales forms (rectangles and square) which are proportional the some in the others.
- The orientation of the cold entities in the North and the tepid warm entities, in the South.
- The plans consist of two different entities:
  - A wet zone (activity: bath) and, dry zone (activity: entrance, and changing).
- Both entities have the same logic. organisation: A big square which constitutes the nucleus of the entity surrounded by rectangles of diverse dimensions.
Secondly, at the level of the atmospheres (figure 7):

- The findings at this level match the results obtained at the level of spatial organisation with a wet sector (activity: bath) and a dry sector (activity: accessibility and changing). The change of internal atmosphere is made only at the level of the wet sector which is marked by a gradual rise in the temperature of the rooms, since the room n°4 correspondents in “Bit El Bérdà” passing by “Bit Eddéfia” until reaching “Bit Esskhoun” spaces. This atmosphere division segregates the building into two main entities: the dry and the wet sectors.

- The deepest and least lit components of the building correspond to the warmest spaces inside the bath.
- The absence of bays to avoid the decrease of the temperature.

Thirdly, at the level of the uses and practices of bathing (figure 8):

- The tepid entity is complex, it is a centred element around which are organized the other entities.
- The itinerary of the user follows the direction of heat and darkness.

<table>
<thead>
<tr>
<th>Class 1</th>
<th>Class 2</th>
<th>Class 3</th>
<th>Class 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>{1, 2, 3, 4, 5, 6, 7,8}</td>
<td>{1, 2, 3, 4, 5, 7,8} without (6.Mathras)</td>
<td>{1, 2, 3, 5,7} without (4.Bit Bérda, 6.Mathras)</td>
<td>{1, 2, 4, 5, 6, 7,8} without (3 :Maksoura)</td>
</tr>
<tr>
<td>Type 1</td>
<td>Type 2</td>
<td>It is a unique and particular one which we cannot classify</td>
<td>Type 3</td>
</tr>
<tr>
<td>It is a unique and particular one which we cannot classify</td>
<td>It is a unique and particular one which we cannot classify</td>
<td>Type 3</td>
<td></td>
</tr>
<tr>
<td></td>
<td>It is a unique and particular one which we cannot classify</td>
<td></td>
<td></td>
</tr>
<tr>
<td>H1 Hammâm Yusuf Saheb El tabaa Médina de Tunis</td>
<td>H2 Hammâm Al Dhahab Médina de Tunis</td>
<td>H6 Hammâm de la Noria Médina de Tunis</td>
<td>H10 Hammâm Sidi Abdelali Médina de Soliman</td>
</tr>
<tr>
<td>H4 Hammâm des Teinturiers Médina de Tunis</td>
<td>H5 Hammâm des Kashashin Médina de Tunis</td>
<td>H11 Hammâm Béni Khiar Médina de Béni Khiar</td>
<td></td>
</tr>
<tr>
<td>H 3 Hammâm Sidi Khalaf Médina de Tunis</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Classification of the Hammâms. (Source: Author).
Figure 6: System of Organization - Composition, Dimensions and Proportions (Source: Author).

Figure 7: Configuration of the Atmospheres and Manner. (Source: Author).
Finally and at the structural level (figure 9), the following can be stated:

- The existence of axes of substances distributed according to an irregular plot but generated by the central regular spaces of the Mahrés and Bit Eddéfia, and by the shape of the plot of land (seen on roofs shapes).
- We find in this studied building a report: 1/3 of the structure with regard to the complete surface of the building.
Synthesis

There is a need to widen the scope of this research in order to analyse a larger sample of hammāms. The research presented in this paper has been limited by mitigating the gaps and the difficulties encountered in the fieldwork and the collection of data. It is hoped to develop a further understanding of the genesis, the evolution and the identity of the public baths architecture and highlight the breaks and continuities between them. The transition between the thermal baths and the hammāms need further research into various types of physical configurations. This understanding will provide a stronger basis for the future restoration and re-use of historic public baths.

References


--------------------------

Ines Bouraoui

Ines Bouraoui is a young Tunisian architect who has studied Architecture in the National School of Architecture & Urbanism of TUNIS for six years before obtaining diploma in Architecture in 2004. Then, in 2007 she obtained her Masters degree. Actually, she is
working on a doctoral research (PhD) in Architectural morphology & modelling of conception. Project title: Architecture of the collective baths of NORTH AFRICA: a cognitive system of conversion of thermal baths in hammâms, breaks and continuity. (L’architecture thermale des bains collectifs ifriquiens : Un système cognitif de transformation des thermes aux hammâms, ruptures & continuité)/ Ines has conducted several architectural and design projects. Now as a university teacher, at The Institute of Art & Multimedia of Tunis, she is working on many subjects amongst which the simulation of architectural spaces using synthesis images (VR).
THE SURVIVING HISTORIC HAMMĀMS OF THE MEDINA OF TRIPOLI - LIBYA: TANGIBLE AND INTANGIBLE DIMENSIONS

Magda Sibley and Fodil Fadli

Abstract
Unlike the other medinas in the Arab-Islamic world, the medina of Tripoli (capital city of Libya), has never had many historic public baths. This is probably due to a more conservative tradition where most of the Libyan women use the hammām only once, as part of their pre-wedding preparation and celebration. This paper presents an analysis of the three and only remaining hammāms of Tripoli and the way they are used and perceived today. Based on the results of a survey conducted by the authors in July 2008 (as part of an AHRC funded research project on the historic hammāms of North Africa) the architectural characteristics of these historic structures are presented along with their increasing usage by a cosmopolitan population (Tunisians, Moroccans and Sudanese) living inside the medina. This paper also outlines a number of guidelines for the sustainable use and adaptation of the hammām within the Libyan context.

Keywords:
Historic hammāms; Tripoli-Libya; tangible/intangible heritage; architecture.

Introduction
Hammāms were and are still key urban facilities in the old medina of Tripoli despite their small number. Contrary to some countries of the Machreq (the Levant), historic public baths of the Maghreb are still operating and enjoy a large local clientele. Moreover new hammāms are still being introduced in recently built neighbourhoods. However, the majority of the historic public baths encounter difficulties due to the change of their heating, water distribution, lighting and ventilation systems and the increasing costs associated with their running. In the case of the medina of Tripoli, local social customs and habits are still strong and new ones have been introduced by Tunisians and Moroccans living in Tripoli. Despite these several changes, the hammām still plays an important role in the social context of the historic medina of Tripoli.

The Medina of Tripoli and its Urban Fabric
Libya has a remarkably rich history and various successive civilisations gave Tripoli its architectural diversity and character. Founded in the 7th century BC, by the Phoenicians and
occupied successively by the Carthaginians and the Romans, this capital city counts today a population of 2,093,000 inhabitants. The city was known as Oea during the Roman era and its current name has its origin from the word Tripolis meaning three Roman cities in Libya: Oea, Sabratha and Leptis Magna.

Tripoli grew and evolved through different eras and civilisations: Phoenicians 7th century BC, Romans 1st century, Vandals 5th century, Byzantine 6th century, Arab-Muslims 7th century and Ottoman from the 16th century until the Italian invasion in the beginning of the 20th century. Throughout most of its history it has been the gateway to sub-Saharan Africa and an important start or end point of many trading caravan routes. The Ottoman (1551-1711 and 1835-1911), the Karamanlı (1711-1835) and the Italian (1911-1943) and British (1943-1951) colonial periods left a distinctive mark on the city’s architecture and urbanism.

The Medina of Tripoli is an ancient walled city. Its high walls were originally built on the landward side to repel attacks from the interior, and these survived many invasions throughout the centuries. The city’s sea-facing wall is less ancient, however, as it was built in the 8th century by Tripoli’s Muslim ruler. Three large gates provided access to the old town through the fortified city walls: Bab Zanāta in the west, Bab Hawāra in the southeast and Bab Al-Bahr in the north wall. The city walls are still standing today.

The basic street plan of the medina was laid down in the Roman period when the walls were constructed as protection against attacks from the interior of Tripolitania, and are considered well planned, possibly better than modern street plans. In the 8th century a wall on the sea-facing side of the city was added. The achievement of a strong urban image was the result of different building activities that concerned religious, collective, and commercial institutions, together with the careful design of the defensive walls, bastions, and the castle (Kala’a), as well as the creation of particularly refined houses and residential spaces.

The specific features of the urban fabric of Tripoli are due to a process of assimilation of models belonging to other urban cultures of the Mediterranean world. This explains the particular way the houses’ windows, balconies and terraces open onto the street, unlike in other Islamic medinas, where the buildings are more introvert. The polarization of the urban routes on the waterfront was clearly a Roman heritage (Micara, 2008). The organisation of the arteries inside the medina was basically planned on the Roman grid. Hence the hammāms of the medina were also located on these main arteries, as was also the case of the Hadrianic baths built by the Romans in Leptis Magna, few kilometres East of Tripoli.

Tripoli used to be a transit city to Sub-Saharan Africa, for merchants and camel caravans plying the Saharan trade routes. The old city was then the site of several large inns, known as caravanserais or funduqs. There were also few hammāms or public baths built during the Ottoman era (Messana, 1973), and which were used by the merchants and travellers of the caravans transiting by the medina of Tripoli.

After the Libyan independence from the Italian occupation in 1951, many traditional families
moved out of the old city to occupy houses and apartments formerly used by the departing Italian population. These newer houses were equipped with better sanitation, water supply and other facilities, and the houses in the old city were left abandoned. Most fell into a sorry state of disrepair, as a result of neglect. By the mid-1970s, many of these fragile and beautiful buildings collapsed.

A project to restore key buildings and to trace back the city’s architectural history was then launched by the Libyan authorities in the mid-1980s, under the authority of the Agency for the Management of Historic Cities in Libya –AMHC-. This has been undertaken with a particular focus on monuments such as mosques, large houses, consular residencies, pashas’ houses and other key amenities such as hammāms in the old city. Furthermore, the project has seen another dynamic push by the beginning of the 21st century.

**Hammāms of Tripoli in Travellers’ Accounts**

Hammāms (public bathhouses) are one of life’s focal points in Tripoli despite their small numbers compared to other Islamic cities in the Mediterranean. They play the same role as those of other North African and Middle Eastern cities, and are seen as a place not just to clean up, but to unwind and socialise.

Hammāms of Tripoli, despite their small number, have been described in several travellers’ accounts. They were all built during the first Ottoman era (1551-1711). The first who cited these bathhouses is al-Bakri (Abbas & al, 1968: 31). However he just noted that the medina had nice hammāms without indicating their number. In the 12th century, the Moroccan traveller al-Tijani states: “I entered the medina, and I found hammām al-balad (medina). This hammām is next to the Kasbah (commonly called kala’ār or citadel), small but surely nicely decorated as I also notice it is part of a mosque waqf. There are also two other hammāms in the medina, but they are less decorated” (al-Tarabulss Medina magazine, 1984: 55).

Hence, and according to al-Tijani, the medina of Tripoli counted three hammāms in the 12th century. The number of hammāms in Tripoli did not exceed four, even though it was stated in some travellers’ accounts that it counted up to 8 and sometimes 10 hammāms. However, the credibility of these un-authored accounts is not confirmed as there is no historical evidence.

<table>
<thead>
<tr>
<th>City / Year</th>
<th>1930s/40s</th>
<th>1970s-80s</th>
<th>2000-2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Damascus</td>
<td>40 1</td>
<td>20 2</td>
<td>13 3</td>
</tr>
<tr>
<td>Aleppo</td>
<td></td>
<td></td>
<td>12 3</td>
</tr>
<tr>
<td>Fez</td>
<td>30 4</td>
<td></td>
<td>15 3</td>
</tr>
<tr>
<td>Cairo</td>
<td>47 5</td>
<td>33 6</td>
<td>5 9</td>
</tr>
<tr>
<td>Tunis</td>
<td>53</td>
<td>23 7</td>
<td>15 9</td>
</tr>
<tr>
<td>Tripoli</td>
<td>4</td>
<td>3 8</td>
<td>2 9</td>
</tr>
</tbody>
</table>

Table 1: The Hammāms in the Cities of North Africa and the Levant. (Authors, 2008).

Main surveys on hammāms in different Arab cities and their authors since the 1930s:
- 1 Ecochard and le Coeur
- 2 Munir Kayyal
- 3 Magda Sibley
- 4 Edmund Secret
- 5 Edmond Pauty
- 6 Andre Raymond
- 7 Ahmed Saadaoui
- 8 Abu-Chouireb
- 9 Magda Sibley & Fodil Fadli

At the beginning of the 16th century (1518), Hasan ibn Muhammed al-Wazzan al-Fasi (Joannes Leo Africanus) described the customs and some manners of Tripoli inhabitants. He says:
“People of Tripoli like eating in the hammāms and have parties there –i.e. weddings- as they sing and dance inside. In each hammām, there is a barber…the majority of hammāms is registered as a wakf of mosques and schools-madrassa-s-...” (Leo Africanus, 1956: 384).

The French surgeon Gerard, who was captured and imprisoned in Tripoli by the end of the 17th century made a clear description of the medina of Tripoli and the manners of its people. Gerard made a surprising note on a different building type which also he referred to as a hammām; “The medina of Tripoli was a naval base for the pirates of Algiers, Sila, Tunis and Tripoli. They built several buildings where they imprisoned the Christian captives. The prisoners called these buildings “Bagno” (bath or hammām); because of the heat they felt inside these buildings, as they were as hot as hammāms” (Abu-Chouireb, in Athar al Arab, 1992: 85).

Early in that century, In 1604, Iskandar Pasha builds next to the Jama'a Sidi-Darghūt the homonymous hammām, confirming a new urban focus, created by the two first Ottoman governors of the Medina, halfway between the Marcus Aurelius Arch and the crossing of Arba' Arsat. It was also called hammām al-Seghīr (the small hammam), as it was considered as the smallest public bath in the medina. In 1658, Athmane Pasha al-Sakazli (the Ottoman wali-governor of Tripoli) ordered the construction of a hammām located in the centre of the medina, precisely at the Arbaa Arsat-four columns-. It was called hammām al-Kebīr (The Great hammām).

Traveller Ibn Abi-Dinar (17th century) listed four hammāms in the medina and its surroundings. In the 19th Century, the British archaeologist H.S. Cowper, who visited Tripoli in 1895, noted that the medina counted four hammāms. These ones are: Darghūt, al-Helga, al-Kebīr and al-Gourjī. This number did not include hammām Mizrāne, as this one is located outside the fortification walls of the medina. Today this hammām has totally disappeared, and a car park stands on its ruins. Hammām al-Gourjī closed few years after Cowper visit to Tripoli, and the building was used as a warehouse (Al-Manawī, 1987: 104). It totally disappeared around 1920’s. Hammām al-Kebīr has known the same misfortune, as it is mostly in ruin today.

In July 2008, during the fieldwork carried out by the authors, the two remaining historic baths of the medina were operating; hammām Darghūt and al-Helga, while hammam al-Kebīr was in an...
advanced state of decay, however the large changing room remains and is still covered by a gigantic dome (Figure 2). It is currently used as a slum accommodation by poor African immigrants, and was until recently used as a market with individual small shops.

Al-Helga is located near Sūq al-Attāra and al-Liffā. It operates for men and women on a rota-basis (Table 2). Whereas hammām Darghūt offers more time slots for men’s bathing sessions and is easily accessible by car, hammām al-Helga caters more frequently for the female clientele and has difficult vehicular access. According to the interviews carried out by the authors with the managers of the two operating baths, and based on behavioural observation of the users, the location of the two hammāms has influenced their managers to target their clientele on a gender basis. Sūq al-Attāra (perfumes) and al-Liffā (clothing) is mainly frequented by women. Hence hammām al-Helga targets more women than men.

Architectural Characteristics and Urban Integration

Hammām Darghūt is part of the complex of the same name (Figure 3) comprising also the mosque, a turba (cemetery), a madrassa (school), a midha, the imam’s house and stock rooms. It is a wakf property (a religious endowment) of the Othman pasha madrassa, which is located in Shari’ Darghūt pasha. While this hammām has undergone a full restoration in 2005 and is currently fully operating, Hammam al-Helga has benefited from maintenance work only. Hammām al-Kebīr has however partially collapsed, its large undressing room covered with a large dome still remains.

On the other hand, hammām Darghūt is next to a large mosque, is easily accessible by car and is adjacent to a sūq which is mainly frequented by
The historic hammāms of Tripoli have the characteristics of being part of an urban cluster of facilities, located in a strategic area of the medina along the main arteries of the urban quarters. This urban facilities’ cluster consist usually of a mosque, a market area (sūq), a theology school (madrassa) and sometimes a caravanserai (founduk).

They continue to provide an important socio-cultural centre for the population of the medina of Tripoli specifically and attract clients from outside the medina for pre-wedding celebrations, and in the eve of major religious festivities such as the end of Ramadhan (the fasting month), Eid al Adha and other religious festivals. They are owned the by the Waqf (a religious endowment institution) through their affiliation to either a mosque, a madrassa or an administrative amenity (i.e. dīwan).

Similarly to other hammāms in the Maghreb countries, the spatial organization of the bathing spaces of the hammāms of Tripoli is based on a linear transition from cold to warm to hot spaces. It has a simple spatial organization based on non-perfect symmetry.

The hammām is composed of different rooms and spaces as shown in figure (4) however it can be subdivided into three main zones:

1- The cold zone composed by the entrance skīfa and the changing spaces (A and B in Figure 5).
2- The hot/bathing zone composed of the transition space (warm room), the bathing spaces (hot room, D, d1, d2, and d3 in Figure 5).
3- The heating zone composed of the furnace (F), the water tank (f1), the fuel storage spaces (E and e1 in Figure 5).

The main architectural spaces (the undressing

<table>
<thead>
<tr>
<th>Slot</th>
<th>Day / Hammām</th>
<th>Saturday</th>
<th>Sunday</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.30 am to 6 pm</td>
<td>Darghūt</td>
<td>Men</td>
<td>Women</td>
<td>Women</td>
<td>Women</td>
<td>Women</td>
<td>Men</td>
<td>Men</td>
</tr>
<tr>
<td>6 pm to 11 pm</td>
<td>Men</td>
<td>Men</td>
<td>Men</td>
<td>Men</td>
<td>Men</td>
<td>Men</td>
<td>Men</td>
<td>Men</td>
</tr>
<tr>
<td>8 am to 6 pm</td>
<td>Al-Helga</td>
<td>Women</td>
<td>Women</td>
<td>Women</td>
<td>Women</td>
<td>Men</td>
<td>Women</td>
<td>Women</td>
</tr>
<tr>
<td>6 pm to 11 pm</td>
<td>Men</td>
<td>Men</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2: Opening Times and Bathing Sessions for Men and Women in Hammām Darghūt and Hammām el-Helga (Source: Authors, 2008).
room and the hot room) are composed of two large square shaped rooms (B and D in Figure 5) covered by two large domes. The entrance of the hammām opens onto a narrow street “Zanqat al-Hammām al Seghīr” whereas the entrance to the furnace is located on the eastern side wall of the building, opening originally onto a narrow alleyway which is now part of the courtyard of a recently built courtyard complex of craft shops and workshops. Apart from the entrance and a small high window, the facade of the hammām is a blank white wall. The roof consists of two main domes and a series of vaults and chimneys.

All Tripoli hammāms are equipped with their own well (bi’r, f1 in Figure 5). The furnace is traditionally fuelled by wood and/or by-products of local traditional workshops such as wood shavings. The fuel was delivered to the hammām on the back of donkeys. Nowadays, the heating system operates using “naftā” (diesel). These compulsory modifications caused economic and environmental inconveniences to the hammāms managers and users. Some of the interviewed users (in July 2008) were complaining about the “different” heat inside the hammām as compared to when the structure was heated using the traditional fuel. Hammām users (particularly at hammām el-Helga) also complained about the smell of the
“naftā” inside and outside the hammām; in the neighbourhood.

**Social Role and Cultural Importance of Tripoli’s Hammāms**

The public bath plays an important role in the social activities of the Muslim community. It is the venue for a number washing rituals and the conduct of major ablutions before prayers. It is also a meeting space for interaction of various social groups, which regularly visit the hammām. The public bath strengthens the bonds between its regular users. Initial findings from the surveys and participant observation conducted by the authors in the two hammāms during the fieldwork of July 2008 indicate a number of interesting results related to the contemporary socio-cultural dimensions of the hammām. These findings are based on interviews carried out by the authors with the hammāms’ managers and users, and on direct observation inside the different spaces of the two buildings.
Structured interviews and questionnaires targeted all type of users visiting the two operating hammāms. They focused on the hammām usage frequency by the clients, their bathing practices and their perceptions of the hammām, considering both tangible and intangible dimensions. Observations on women’s social practices inside the public bath have been conducted by the female author, while the male bathing sessions have been carried out by the male author. Observations were made on different days of the week and at different times of the day depending on the schedule of the bathing sessions for men and women. Insight was therefore gained into current bathing practices and the use and occupation of spaces inside the baths.

Traditionally, the hammām plays a significant role in arranging marriages. In conservative communities such as in Libya, women who are looking for suitable brides for their sons would go to the bathhouse for this purpose. It is also customary, in many parts of the Muslim world, for the new bride to be taken, with her friends, to the hammām where she is prepared, groomed and applied the henna’ (Herbal paste once applied leaves red/brown colour). The groom is also escorted there, the night before he meets his bride. This custom is still strong and alive as witnessed by the authors during the summer of 2008. In fact, it is worth mentioning here that some local Libyan women visit the hammām only once in their lifetime and this is before their wedding ceremony.

According to the Libyan traditional beliefs; a women who does not go to the hammam before her marriage, will not make a beautiful bride (old Libyan popular saying).

Unlike the hammāms in the other Arab-Islamic countries, the entrance to the hammām is nowadays always managed by a male keeper (even during women’s session). The manager sits at a desk located in the entrance skīfa, the transition space and waiting area between by the hammām entrance and the undressing room. He is responsible for receiving the entrance fee and manages a small shop selling soft drinks, soap and shampoo, towels and other hammām necessities. However, inside the
hammām, a woman is in charge of supervising the undressing room and managing the space during the women’s session. The changing area (Figure 8) is a large square room with a central fountain “nafoura” and is covered by a large dome with openings at its base. Hammām users mentioned that initially the undressing room contained private wooden cubicles which have been recently removed by the management to provide a cleaner and more open space to control. The undressing room has subspaces with different levels of privacy. These include a wooden mezzanine level the “sedda” as well as one or two private rooms that can be rented for special occasions. Lockers are provided for storing valuable before proceeding to the bathing spaces. Clients bring their own towels and other bathing utensils.

Figure 8: Hammām Darghūt Changing Space (Source: Authors, 2008).
From the changing room, the bather enters to the warm transition room by a small door. It is a rectangular longitudinal room, where the “kiyass” or “Kiyassa” the male or female scrubber provides the service of scrubbing and massaging the clients after they had sweated in the hot room and carried out a first and quick wash of their body. In Libya, the majority of hammām workers (Kiyassine or kiyassat) are either Moroccan, Tunisian or Sudanese. In fact this is mainly due to the fact that there are many immigrants working in Tripoli coming from other North African countries such Morocco, Algeria and Tunisia, where the contemporary hammām tradition is much stronger that that of Libya.

The manager of hammām Darghūt used to be a worker of the AMHC. He had been given the responsibility of renting the hammām and managing it himself in July 2007. The manager H.M says “…Hammām Darghūt is an important heritage for the medina of Tripoli. I have worked on the hammām during all the stages of its restoration. Hence nobody else can manage it better than me”.

With regards to the type of clientele of the hammām he added “The hammām receives locals, Arab workers living in Tripoli and tourists… they all like bathing in hammām Darghūt,
because it has kept its original features thanks to the good restoration initiative. In some good days the hammām receive up to 150 customers...and sometimes even more”. These historic public baths represent a familiar space and common heritage for the cosmopolitan North African immigrant population of Tripoli, living both inside and outside the medina.

The manager of the hammām tries to keep the entrance fee as low as possible, despite the increase in fuel and electricity prices. The fee for hammām Darghūt is fixed to 2 Libyan Dinars for adults and ½ Dinar for the kids. The customer pays the kiyass (masseur) separately inside the hammām. In addition to body scrubbing and massage, the women customers receive other services. These include body hair removal, eye brow plucking, henna application and tattoos and even hairdressing from a mobile hair dresser. All these services are not included in the entrance fee but are paid directly to the women providing the services inside the hammām. The fee payable to the kiyass depends on the client and on the services and massages offered by the kiyass or the hammām attendant. It can vary depending on the financial situation of the client and the service they require. As such the hammām is (to some extent) still an egalitarian space as both poor and wealthier clients can use it and can choose which services they receive or not receive.

Despite the fact, that there have been new hammāms built recently in Tripoli, the majority of people interviewed inside the public bath, prefer using the historic hammāms of the medina, because of their original character but also because of the quality of their spaces and heating and the quality of service they provide.

Out of 15 women clients interviewed inside hammām Darghūt, 10 mentioned having been to the newer hammāms outside the medina but prefer to return to hammām Darghūt because “this is an old hammām that has been restored, it has high domes and one does not have the feeling of being squashed in a space with a low ceiling, I like the domes and the vaults and the airy feeling of this old hammām. The new hammāms provide new services such as hairdressing, a small cafeteria etc... but do not have the qualities of the old hammām, such as space, good heating and beautiful features” mentioning about the staff, this interviewed client says: “I like coming to this hammām because of Meriem the Kiyyassa, she has been working here for more than 15 years and she is an excellent kiyyassa,... some clients follow her as she also works in Hammām al-Helga, when hammām Darghūt is open for men,... You do not find a kiyassa as a good as Meriem in any of the new hammāms...”

During the summer time, the hammām has a huge number of women’s parties, as it is the season for weddings. As stated earlier, the tradition that the bride and the groom have to have a “wedding” party with their friends in the hammām is still strong in Tripoli. According to hammām Darghūt manager “...The Tuesdays are the special days for wedding parties in the hammām...in the seventies there were long queues at the entrance of the hammām, it received easily up to 60 bride a day...counting in average 14 women accompanying the bride...this made it up to 900 customer a day”.

A man client interviewed while bathing, said “we used to come here minimum twice a week... plus once every Wednesday when there was
Facing hammām Darghūt is a building which used to be a school. During the summer when the pupils are away, part of the school used to be open for the large number of women who came with the bride to be to hammām Darghūt and was used as a gathering place for those coming to the pre-wedding parties in the bathhouse. Today this building is being restored and it will be used as a hotel. The manager complained about this and said “it would have been better if it was restored and re-used to be a complementary amenity for the hammām… imagine when women come bathing they need to leave their kids somewhere, it would have been better if it was planned as a community centre with multiple activities such as nursery daytime, and community gathering place in the evening.”

In winter the hammām activities double.
According to hammām Darghūt manager, the consumption of water is doubled then. The bath is used in winter mainly for health reasons by both men and women. An old man interviewed inside the hammām said “I usually come twice a month to the hammām when it is hot. However in winter I come at least once a week, mainly Fridays…I also meet with my Arab friends who come to the hammām mainly on Friday.”

Bathing practices in the two historic Ottoman hammāms of Tripoli are strongly alive, and they represent a good example the rich intangible heritage associated with these important historic structures of medina.

Conservation and restoration institutions in North Africa should learn from the restoration process and the reuse scenarios adapted by the AMHC in the perpetuation of the hammām tradition in the medina of Tripoli, despite their small number.

**Conclusions and Recommendations**

The two historic hammāms of Tripoli- Libya still play a central part in the social and cultural life of the Libyans and the North African immigrant population of Tripoli. They provide a number of functions, and sustain a rich tradition of bathing and health care. It is still a meeting venue for friends and relatives especially during pre-wedding celebrations. The two remaining historic hammāms in the medina of Tripoli are operating and are kept in a good functioning condition. In fact, and due to their small number compared to other Arab-Islamic cities, they have received more attention and protection from the Libyan authorities. Nowadays, they are still receiving large numbers of users, Libyans, Arabs or overseas tourists.

New public baths inspired by the two remaining historic structures continue to be built in every new modern neighbourhood. However, a short visit to some of them and comments from the hammāms users indicate that they are poorly designed, their heating system is in some cases risky and they can sometimes constitute a safety and health hazard. This is because there are no clear regulations and guidelines for the planning, construction and management of new versions of the traditional hammām that are emerging everywhere. Opportunities for perpetuating the good practices of the traditional public baths can be summarized in the following main points:

- The need to develop clear design guidelines for building new hammāms
- The need to identify adequate materials and construction techniques that are responsive to the specific internal micro-climate of the hammām (i.e. appropriate plasters and renders that behave well under high temperature and humidity conditions)
- The need to increase awareness of the local people and organisations on the importance of such structures but also to promote the use of historic hammāms by larger tourism developers.
- The need to introduce health and safety directives for the usage of hybrid heating systems (combination of modern techniques with the design of the old furnace).

Different innovative approaches should be developed for the sustainable use of the "modern versions" of the hammām. Therefore, particular attention has to be given to adapting modern technologies, reviving traditional construction methods, recycling water, reducing
environmental pollution and using renewable energy. Future implementation plans need to take into consideration the requirements of the local stakeholders and inhabitants so that the hammam can develop into a sustainable resource for the local neighbourhood and the city. Hammāms, either the historic or newly built ones should be part of a complex dedicated to the health, wellness of the urban population.

Acknowledgements

- The authors wish to thank the Arts and Humanities Research Council (AHRC) in the U.K. for funding the research project “The Historic Hammāms of North Africa and their survival into the 21st century”.
- The authors also wish to thank Arch. Fathia el Menghaoui, and Dr. Abdelkader Mohamed Beetro from the School of Architecture at the University of al-Fatah- Tripoli, Eng. Giuma Salem Gieniv; Director of the AMHC, Arch. Basma Sanoga; Chief Architect of the Architectural Studies Department at the AMHC, Arch. Abdelmounim al-Soukni Architect and Restoration expert in Tripoli, and the staff at the Architectural Studies Department at the AMHC-Tripoli (Libya) for their collaboration and help during the fieldwork carried out on the Hammāms of Tripoli in July 2008.

References


Notes
1- The data collected during the fieldwork in Tripoli (July 2008) was through:
   • Authors Interviews with owners/managers of the two historic hammāms of Tripoli
   • Authors questionnaires/interviews with the users of the two hammāms
   • Authors meetings and interviews with architects and engineers involved in the restoration and maintenance of hammām Darghūt and hammām al-Helga.

2- The International Journal of Middle East Studies (IJMES) Transliteration system has been used in this text.

-------------

Magda Sibley
Dr Sibley’s is a senior lecturer in Architecture at the University of Liverpool school of Architecture. Her research examines world heritage Islamic cities in North Africa and the Middle East with particular emphasis on the transformations of the residential quarters. Two building types have been the focus of her research: the courtyard house and the public bath or hammam. She has been awarded various research grants from the Arts and Humanities Research Council in the UK (AHRC) and the EU to carry out field work on the public baths in the Mediterranean world heritage cities. This work recently gained an international dimension with her partnership in the European consortium for the HAMMAM project, funded under the 6th Framework Programme - Specific Targeted Research Projects (STREP) (see http://www.hammams.org). She has also been successful in securing a large AHRC research grant in June 2006 to document the historic public baths of North Africa. This project is funded for a period of three years. She has also established a research group on hammams at the Liverpool School of Architecture (see http://www.hammams.info/). As well as her hammam work, she is also involved in a four year EPSRC funded research project led by Salford University, SURegen - Integrated Decision Support System for Sustainable Urban Regeneration, where she is investigating heritage-led urban regeneration. She is currently supervising PhD research projects on heritage-led sustainable urban regeneration, eco-tourism, low-energy courtyard housing and sustainability assessment methods. She is fluent in French, Arabic and English and can be contacted at this email address: msibley@liv.ac.uk

-------------

Fodil Fadli
Dr. Fodil Fadli is an Architect-Planner by background. He has graduated from the Polytechnic School of Architecture & Urbanism (EPAU-Algiers). He completed his PhD in assessing the levels of sustainability of tourist resorts around the Mediterranean in 2004 by developing a sustainability assessment matrix. He has worked as a sustainability assessor for a housing development company in Leeds then joined Ulster University to work as a research associate on ‘SUS.DIV’, an EU funded project on Sustainability & Diversity. His research interests focus on sustainable architecture, traditional and vernacular architecture and the restoration of heritage buildings. He has published and presented papers at conferences in the topics of: Sustainability, Islamic & Mediterranean traditional architecture and other related topics. Fodil is currently working as a Research Associate at the School of Architecture, University of Liverpool, on “the Islamic hammāms of North Africa and their survival into the twenty-first century”; an AHRC funded project. He can be contacted at: ffadli@liv.ac.uk
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
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.

![Diagram](image)

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.
The three main structures identify a range of properties:

1- Linear structure found in almost all hammāms (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 maqṣūras. 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.
- 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.

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)
- Mashlah, Barrānī, wasṭī, dakhili (Fez)
- Mashlah, Beīt awal, beīt el-Harāra (Cairo).

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:

- maqsūra – qaser (Damascus)
- Khelwa (Cairo)

A space where one can be alone

The hammām permits to have some privacy by using the khelwass or maqsūras-. Normally maqsūra 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 maqsūra- are generally in the deep parts of the hammām, the deepest maqsūra is usually
called in Damascus “maṣūrat al-mu’ālem”, or the cell where the best scrubber works in the hammām (see Figure 3). In Fez, the deepest maṣūra 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).

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 maṣūra-s are also arranged to prevent seeing inside for people moving near these spaces (Figure 5 & 6).
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 hammāms 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 7: Distribution of maqsūra-s in the Deepest Part in Hammām al-Faqih in Fez. (Source: Heddouchi 1994-1995, with author’s contribution).

Figure 8: Alcoves in the Bathing Space in Hammām Nour al-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).

**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 hammâms, 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 hammâms. Finally the research shows that the hammâm 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.

References


----------------------------------

Roula Aboukhater

Roula Aboukhater is Assistant Professor at the Faculty of Architecture – Damascus University – Syria. As well, she is a Researcher at the “Institut Français du Proche Orient” (IFPO) – Damascus – Syria. As a member of the
academic committee of the Faculty of Architecture at Damascus University in Syria, Roula Aboukhater teaches architectural design, urban planning and informatics for undergraduate and postgraduate students. She is architect-researcher at the “Atelier du Vieux Damas” at the “Institute Français du Proche Orient” since 2004. She is a member of tempusMeda project (2003-2006-no.CD-JEP300096-2002), with the Faculty of Architecture of Damascus University and other European Universities. R.Aboukhater is member of the consortium participating in research in the HAMMAM project (2005-2008-EU, contract no.517704), Hammâm, Aspects and Multidisciplinary Methods of Analysis for the Mediterranean regions. Her research interests include urban design, architecture and urban history, conservation of historical quarters, spatial analysis and sustainability in built environment. Roula’s latest publication on Hammâm include: Aboukhater, Roula, 2008, Traditional Public baths and urban context of Islamic City, comparative study in some Mediterranean cities – Algerian Journal on Anthropology and social studies – by “Centre de recherche en anthropologie sociale et culturelle” – under publication. She can be reached at r.aboukhater@ifporient.org or r-adib@aloola.sy
THE PHYSICAL AND CLIMATIC DIMENSIONS OF THE MEDITERRANEAN HAMMĀMS

Jean Bouillot

Abstract
This paper attempts to explore the different experiences inside case study hammāms in a number of Mediterranean countries. It investigates the physical, climatic, bioclimatic, psychological as well as bathing and ritual aspects. The hammāms are located in six Mediterranean cities: Fez, Constantine, Cairo, Damascus, Tripoli and Ankara. Two main analyses are carried out of the two zones composing the hammāms: the passive ones with their specific devices and the active ones with different thermo-dynamic systems. General statements can be made from the climatic point of view: the hammām design is different and specific from one country to another; all hammāms of the same city are designed in the same standards despite the fact that they were built at different historic periods. This allows us to point out the importance of the impact of the climate on the hammām design in order to achieve human comfort. Hence it is necessary to assess the passive energy areas directly linked to the outside urban context (i.e. spaces paths, souks and streets). There is also the need to assess the climate influence on the design of active areas, as this is the case in Cairo where the hot water pools have been developed possibly in order to prevent dehydration caused by the hot arid climate.

Keywords:
Hammām, water, energy, passive, active.

Introduction
The physical dimension of the hammām’s experience is linked to the different senses of the human body i.e. touch, sight, hearing and smell. Most of the physical experience inside the hammām is bio-climatic and relates to the inter-relation between the air temperature and humidity and the body. Therefore the hammam is designed in order to provide certain thermal comfort conditions. These are linked to the rise in both the air temperature and hygrometry i.e. providing a “steam bath” which helps the sudation of the body. Surrounded by hot-dry conditions, the hammām could be considered as an itinerary through spaces with progressive increase in hot-humid conditions and back to the normal climate.

This progression takes place through three main areas:

- The urban microclimate: it is the outside passive area of paths, souks and gardens where the local climatic conditions are “corrected” by outside natural devices such as trees, canopies.
and fountains, in order to make them more comfortable.

- The hammām passive area: is the inside area of the reception, the changing room and the rest hall where the internal thermal-dynamic devices such as air stratification, air movements, buried pit, fountains, high ventilation and high thermal mass help create comfortable conditions both in summer and in winter. They generally remain inside the comfort zone of the building bioclimatic chart (tab.1 and annex 2).

- The hammām active area: is the bathing area where the saturated environment, near approximately 35°C T° / 100% H° is provided through several rooms: frigidarium (cool), tepidarium (warm), calidarium (hot). The thermal-hygrometry conditions are obtained through the internal production of energy i.e. burning fuel in the furnace in order to heat the water and produce steam, as well as providing under floor heating in the bathing spaces. Specific devices and practices are used for the same purpose in order to adapt to the local climatic conditions. Comparing thesome of the architectural features of the hammāms in the case study cities, the following observations have been made:

- in Cairo: the elevated rest areas in the changing room is covered with a flat wooden roof with lanterns. The entrance has a lobby area, and a central fountain in the undressing room is a frequent feature. In the bathing areas there are hot water plunge pools in elevated small rooms.

- in Ankara the undressing room has a high dome and an upper gallery. A central fountain is a recurrent feature as well as a large dome over the main central bathing space which has a number of iwans and low passageways.

- in Fez, the undressing room has a high dome and a wall fountain, the bathing spaces consist of a progression of rectangular spaces with barrel vaults and hot and cold water tanks.

- in Damascus, the undressing room has a high dome with centrally located fountain surrounded by raised sitting areas. An under floor duct travels from the furnace to the hot and warm rooms.

- in Constantine, there are buffer spaces between some of the bathing spaces and the undressing room has an upper gallery and a central dome.

These observations highlight some of the local characteristics of the hammāms as buildings which can be explained according to local climatic and cultural factors.

**Climates**

The case study buildings analysed in this paper are located in a number of countries around the Mediterranean. Field work was carried out in Tripoli (Lebanon) in November 2005, then Cairo (Egypt) in March 2006, then Ankara (Turkey) in July 2006, Fez (Morocco) in November 2006, Damascus (Syria) in February 2007 and finally Constantine (Algeria) in May 2007 (figure. 1).

The main goal of this study is to compare the same building type, the hammām (or Islamic public bath) in different climates and analyse the passive environmental solutions adopted in each location.
One can distinguish four kinds of climates (table 1):

- Coastal climate in Tripoli-Lebanon where both the sea proximity and the zero-altitude limit the year temperature range with a regular medium humidity;
- Alluvial plain climate in Cairo-Egypt where the daily humidity ranges from normal humidity to dryness during two moderately contrasted seasons throughout the year
- Semi-humid southern plateau climates in Fez and in Constantine without total dryness in summer and no extreme cold in winter.
- Dry plateau climates in Damascus-Syria and in Ankara-Turkey with long dry summers and cold winters influenced by northern winds.

The Analysis of the data obtained from the measurements of temperature and humidity taken outside the hammām (the street) and the entrance lobby area, shows that they fall within the comfort zone of the chart in Cairo (March), Ankara (July) and Fez (November). However, this is not the case for the data gathered for Damascus and Constantine where measurements were made during February and November respectively.

In February the temperatures fall down in Damascus and the entrance lobby temperature in the hammāms is 13°C at worst (al-Omari hammām) and 19°C at best without any heating (al-Silsile hammam). The lobbies remain in the comfort zone in the summer which is the longest season in the year; the passive systems in the lobbies are mostly designed according to this major season.

The results concerning the bathing spaces themselves (frigidarium, tepidarium, calidarium) can be compared to one another as the environments are heated and humidified by an active way throughout the year. Although the building inertia might be different between the various case study buildings with some hammāms being partially sunken in the ground, the results still allow comparison between the different active bathing spaces of the different hammāms.

Another important aspect to observe is the relative positions of the different measurements inside the active zone of the hammāms; at best these positions reveal good progression sequences, at worst they reveal problems which are caused more often by poor maintenance or insensitive modifications of the spaces.
Table 1: Climate and Bioclimatic Sequences Inside the Hammām Case Study. The climates are evaluated following a twin scale temperature/hygrometry: cold, temperate & hot for temperatures; humid (hum), normal (norm) & dry for hygrometry. The combination of the two components gives typical extreme seasons: temp-dry / hot-dry (Cairo), cold-norm / hot-dry (Ankara), temp-nor/hot-dry (Damascus), temp-norm / hot-norm (Fez, Constantine). (Bouillot, 2001). Order of rooms in passive area & one graphs: 1 frigidarium (cool), 2 tepidarium (warm), 3 calidarium (hot). (Source: Author).
In addition to minor transformations such as doors missing between bathing spaces in Cairo and in Constantine, more drastic modifications are found such as the calidarium being transformed into a sauna and partitions introduced in the tepidarium in the case study of Ankara, or the inversion of circulation between the calidarium and the tepidarium in Fez. The sequences between the passive area (entrance lobby & rest areas) and the active area (frigidarium, tepidarium, calidarium) are clearly identified with the thermo-hygrometry environment. Hence what is the role of the architectural design in a hammām building?

**Bioclimatic Behaviour and Devices in the Passive Areas (table 2)**

Inside this first zone of the hammām, the architectural design aims to create a comfortable thermo-hygrometry environment with passive means. These conditions should remain inside the comfort zone throughout the year. The results indicate that the comfort zone in these spaces is maintained in the case of Cairo (in March), Ankara (in July), Fez (in November) and Constantine (in May). However, this was not the case in Damascus (in February) as the entrance to the case study hammām changing room opens directly onto the street (no buffer zone exists as is the case of all the other countries) and the door is frequently left open.

**Dome Structures**

Considering table 2, the verticality and the dome structure of the changing area are the dominant design elements, except in Cairo where almost all hammāms have a flat wooden roof with natural lighting and ventilation lanterns. This is the case in hammāms of Bab el Bahr and Tambali.

In the summer periods, the height of the dome allows for stack effect to take place and the central fountain provides evaporative cooling of the undressing room. During the day, the lighter hot air can be eliminated through the oculus and the lantern windows, while the heavier cool air accumulated in the lower parts of the changing room during the night remains during most of the day as is the case in the courtyards of the neighbouring houses.

In winter, all the openings are closed and the water is stopped from the fountain. Hence the heat from the bathing spaces is stored in the heavy mass of the building and participate to convection air movements inside the volume. The vertical proportions of the changing area show that the summer thermal conditions are the most important to manage.

**Mineral Walls**

All hammāms walls were built of stones, and more rarely of brick (Egypt). This was meant to support the roofing structures, the ground pressures when the building is sunken in the ground, and to give a strong inertia to the building.

**A Partially Sunken Structure**

In Cairo, Damascus and Tripoli, the buildings are partially sunken into the ground and this helps to increase the inertia of the building and its capacity to store energy as it takes advantage of the ground insulation. Throughout the year, the thermal mass of the building helps to store heat inside the structures; this helps to keep the spaces warm during the winter. In the summer season, night ventilation allows to store cool air in the undressing room.
### Table 2: Seasonal Bioclimatic Behaviour in Passive Areas. (Source: Author)

<table>
<thead>
<tr>
<th>Passive areas SUMMER</th>
<th>Devices &amp; Materials</th>
<th>Passive areas WINTER</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CAIRO</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cubic wooden volume</td>
<td>Flat mud roof</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wooden lantern</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Towel drying attic</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Burying</td>
<td>Central pit</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lateral upper floors</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ANKARA</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wooden dome volume</td>
<td>Lantern</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Upper gallery</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stone walls with</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>high windows</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Towel drying attic</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Central fountain</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stove</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FEZ</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High brick dome</td>
<td>Oculi</td>
<td></td>
<td></td>
</tr>
<tr>
<td>volume</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lateral galleries</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stone walls</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DAMASCUS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High brick dome</td>
<td>Top oculus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>volume</td>
<td>Lantern</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stone walls</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Burying</td>
<td>Central pit &amp; stairs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sitting iwans</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Smoke chimney</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Centre fountain</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CONSTANT.</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brick dome on centre</td>
<td>Lower &amp; upper</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cubic volume</td>
<td>galleries</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lateral upper windows</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stone walls</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Towel drying gallery</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Entrance skifias</td>
<td>Buffer spaces</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>TRIPOLI</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High stone dome</td>
<td>Top oculus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>volume</td>
<td>Lantern</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stone walls</td>
<td>Central pit &amp; stairs</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Sitting iwans</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Central fountain</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The partial burying system is efficient during the whole year, and the central pit allows entry of cool air in summer & protect against cold air in winter. The attic blocks summer heat & helps the drying of towels in winter. 

The high dome makes anabatic air movements easier all year long and provides a gallery to enjoy warmth and dry towels in winter. The fountain coolness in summer & the stove improves warmth in winter.

In summer the hot air can be let out while in winter it can be preserved to promote convection movements useful to the recycling of cold air.

The combination of the high dome with the buried central pit with stairs maximizes the thermal polarities. It keeps coolness in summer and warmth in winter due to convection air movements.

Like in Ankara the gallery can be used to provide warmth and dry towels during winter due to sun rays penetration (morning time mainly). The skifias entrance buffer space insulates the changing room throughout the whole year.

The high central dome has been designed mainly for summer but the deep iwans around the central pit are best appreciated in winter to sit in warmer areas away form the cool air and to enjoy the strong inertia which keeps the building warm.
**Pit System**
The fact that the hammāms are partially sunken helps them to benefit from the pit system (a sunken floor area in the changing room) which allows the cool air to concentrate at the bottom of the undressing room and the warm air to accumulate in the upper air layers of the changing rooms, hence the availability of raised sitting areas in the hammāms of Cairo, Damascus and Tripoli.

**Mezzanine Level in the Changing Areas**
The availability of raised changing areas in the undressing room is achieved in Ankara and Constantine through the availability of mezzanine levels. These raised areas offer warmer rest spaces during the winter season when the year temperatures are at their lowest (11.7 & 12.6°C). Furthermore, high spaces and mezzanine galleries also help to dry towels during the winter by taking advantage of the natural air stratification and air movement convection.

**Entrance Buffer Spaces**
In almost all the hammāms investigated, the entrance from the outside to the changing area is provided with a buffer space which insulates it from the outside air temperature both in winter and summer.

**Heating**
The heat losses from the active area (the bathing spaces) benefit the changing area. In colder climate seasons, stoves are used to heat the changing areas in the hammāms of Ankara and in Constantine. In Damascus case study hammāms, the heat from the chimney located in the warm room also contributes to the heating of the changing room.

**Thermo Dynamic Systems and Behaviour in Active Areas (table 3)**
Table 3 illustrates the main sequences inside the active area of the hammāms, from the grey arrow (entrance lobby) to the last room (calidarium). Usually, the sequence includes three main rooms: frigidarium, tepidarium, calidarium, like in the antique Roman thermal baths.

One can observe the two main organizations in the plans of hammāms around the Mediterranean:

- the directly Roman influenced one in Fez and in Constantine with linear sequences, barrel vaults and bucket system for water
- the Ottoman system with tepidarium centred plan, domes and fixed individual basins system for water in Ankara and in Cairo

And two particular and mixed cases with:
- linear-centred in Damascus combining the two organizations
- linear-multi centred in Tripoli

In all these cases, except in Amouneh-Damascus, the tepidarium is the largest room inside the hammām: here the air and floor temperatures allow most of the users of the hammām to stay for a long period.

**Heating-Steaming Systems**
The systems of space heating and production of steam for the bathing spaces are similar in all the hammāms of the same city but vary from one country to another as follows:
- hot water pool in Cairo
- hot water tank with steam window and hot massage bench in Ankara and in Tripoli
- hot water basin inside the calidarium and the
hypocaust in Fez
- hot water tank with steam window and hypocaust tunnel in Damascus
- hot water basin inside the calidarium and hot massage bench in Constantine

Table 3: Thermo-Hygrometry Systems and Behaviour in Active Areas (Source: Author)
It is possible to classify these techniques according to the geographic region as follows:

- The systems of the hot water pool (Cairo) or hot water basins (Fez and Constantine) located in the hot room (calidarium) are found in North African countries. In the case of Fez in Morocco and Constantine in Algeria, hot water is collected from the hot water pool in the hot room, using buckets. This could be the result of climatic, but also cultural and historical factors. In the hammams of Cairo the hot water pools are plunge pools. However, hot water for washing is collected in individual washing basins with hot and cold water tabs. This is certainly climatically well-adapted to the local dry and dusty environment.

- The systems with hot water tank in the furnace, a steam window in the hot room, fixed individual stone washing basins and a hot massage stone table are typical features of the hammams in the near East as they are found in Ankara (Turkey), Tripoli (Lebanon) and Damascus (Syria). In the case study of the hammam in Ankara the steam window has been removed and the steam room has been transformed into a hot dry room (called sauna by hammam managers).

**Volume Sequences**

All the bathing areas of the hammams (in all case study cities) are covered by a system of vaults and domes:
- A system of barrel vaults is widely used in Fez and in Constantine
- Domes are widely used on the hot rooms of the hammams of Cairo, Damascus, Ankara and in Tripoli

In the two cases, contrary to a flat ceiling, a curved one has been adopted to help improve the air convection circulation from bottom to top (anabatic) and from top to bottom (katabatic). The flat roof replacing the former dome above the tepidarium of hammam Bab el Bahr in Cairo is not a good solution because it causes damp niches in upper angles.

The organization of the volume sequences is:

- In Cairo (tab.3): following a low large dome in the frigidarium, the high domed (formerly) tepidarium is supplied by the higher hot pool calidarium. Air stratification and siphon effect of this last room organize the heat and steam distribution inside the tepidarium. (Bouillot 2006).

- In Fez-Saffarin (fig. 2), the high progression of the barrel vaults helps to concentrate the heat and the steam inside the last high-narrow calidarium. Furthermore, the steam from the hot water basin, the absence of doors between the rooms and the water on the floor above the hypocaust help to concentrate heat and steam in the calidarium and diffuse them progressively inside the other rooms; the normal progression from the changing room has been disrupted by entering the tepidarium before the frigidarium (inversion of the accesses due to insensitive alterations). In Fez – Moulay-Idriss (fig 3.), there is a progression from a high-large-square changing area to lower bathing spaces with reduced reaching a low-narrow-long calidarium where the steam and the heat are concentrated.

- In Tripoli, the domed volumes follow an increase in height and width hierarchically from the frigidarium to the calidarium, the steam and the heat are trapped and kept as the volume gets higher and larger, and the thermo-hygrometry environment increases naturally towards the
Figure 2: Sequence in Hammam Safarin in Fez Moulay (Source: Author).

Figure 3: Sequence in Hammam Idriss in Fez (Source: Author).

- In Constantine, barrel vaults have the same height in all the rooms and the progression is achieved by a buffer space between the lobby and the frigidarium (no doors) and by another one between the frigidarium and the calidarium. The latter one is not considered as a real tepidarium.

- In Ankara (tab. 3), the calidarium was located between the central tepidarium and the hot water tank; which provides heat and steam through a window. Large proportions and the small low access to this room helps keep the hot steamy atmosphere inside the room. The heat and the steam from the hot massage bench maintain the balanced environment of the large tepidarium surrounded by three iwans. Hypocaust air ducts with chimneys compose the complex underground heating system which keeps high temperatures inside the thermal mass.

- In Damascus (tab.3) the successive volumes are of standard sized dome-units (2 units and 1 lateral small one). They compose the tepidarium and a larger calidarium (3 units with 2 lateral ones). The areas temperatures are controlled by the doors separating them.

General Statements about the Climatic Impact on Hammām Design

As shown earlier under heading 4, the first zone of all the hammāms works only according to the local climate with the help of the passive features which compose the architectural design of entrance lobbies, reception and rest areas. This first zone is named the passive area as it has no active system of heating or cooling. As shown under heading 5, the second zone operates with the production of energy from burning fuel in the furnace in order to heat the water, the building and generate steam in the bathing spaces. This zone of the hammām is named the active area as it is heated by the energy produced in the furnace. Although this second relies on an active heating system, it is also characterised by various energy conservation strategies linked to the local climate and to a balanced and efficient thermo-dynamic entities based on carefully chosen proportions of the bathing rooms.

From a global point of view, the hammām design is different from one city to another, even if some similarities can appear in some fields. Within the same city, hammāms built in different historic periods present the same basic
design, based on the same principles. These observations highlight the local dimension of hammāms buildings which are designed according to local climatic and cultural factors. This is a reason why the comparison between the different interpretations of the same programme presents a limited interest in itself except providing the opportunity to stress the specificities of each building.

Why do hammāms buildings forms vary from a hammām to another? This is a challenging question which is discussed in the following sections. Another question that is addressed is related to the passive areas and their responsiveness to the extreme season requirements, of summer and winter. Although there are many similarities that can be justified by similar climates, each climate remains specific to its geographic location. Amongst the five climates in this study, only two, Fez and Constantine, can be considered of the same family (tab.1). However there are still slight differences due to cooler conditions in the second case as the hammāms of Constantine (unlike those of Fez) present an upper gallery in their changing room and a closed dome with low proportions and no ventilation.

Indeed the design challenge is as difficult as the extreme seasons are far from each other (i.e. Damascus). In that case we observe that the design has privileged two main devices useful during the two extreme seasons: 1- The inertia of the structure, maximized by the partial sinking of the building into the ground, which can store the energy and restore it when temperature falls. 2. A simple and large volume that can promote different air movements according to the opening and the closing of the upper oculus and windows.

It is a fact that Damascus and Ankara have climatic similarities with a long hot-dry season (tab.1), even if the second one is colder in winter (11.7°C year average temperature), and the first one hotter in summer (17°C). However, the profiles on the charts are similar (tab. 1). The analysis shows that, in this case, the hammams have been designed by adapting mainly to summer conditions.

In the case of Cairo, the climate is very specific. It has daytime high dryness during all seasons (tab.1). Hence all the Cairene hammāms have a specifically designed entrance and undressing room. It is covered with a soil flat roof without a dome and comprises wooden lantern(s), a wooden structure, a central pit, an attic for towel drying, cross ventilation system and rest areas on elevated lateral galleries.

The most specific element in this case study is the soil flat roof on wooden structure with an attic and a wooden lantern, which prevent heat radiation during summer. If the roof is too hot, it radiates inside the attic volume but this hot air is immediately evacuated outside via the open lantern. This ventilated attic is considered as a cooling device working with the help of the evaporative effect of the drying towels, the heavier cool air moves down inside the lobby during summer periods, while in winter the towels dryer works only because of the warm air stratification.

In Fez and Constantine, the climate profiles are almost similar (tab.1). However it is hotter in the first one (17.9°C year average temperature) and colder in the second (12.6°C). As observed previously the lobbies are smaller in size, like in
Cairo, with a centre dome standing on columns creating peripheral galleries. In Constantine, like in Ankara, upper galleries complete the design probably in order to provide warmer conditions in winter, as its colder than in Fez where the volume remains a single unit.

Two main questions raise at this stage: why is there an obvious size difference from a climatic point of view? And why are there internal galleries? We can assume that the internal gallery system presents several advantages: it sustains the structure with smaller elements, it divides the space vertically and creates a central air column, where the vertical anabatic (down-top) and katabatic (top-down) air movements will work more easily respectively in summer and in winter.

In Constantine, in hammām Suq el Ghazel, the dome is mainly designed for winter periods to help katabatic air movements. However, it is not adaptable during summer periods because it does not provide any openings. This assumption is confirmed by the down-top gallery which can be used in winter to provide warm air which naturally stratifies upwards.

**From Physical to Psychological Dimension**

From the physical dimension, all the elements in this internal zone are concentrated around the same components: water, fire, earth and air together inside the grotto-like, steam, cold water and hot water. This other world leads us into silence, sounds of water, echoes, resonance, feeling, meditation, reconnaissance and identification.

The walk from the outside environment, entering the lobby, undressing and going through the warm-humid-dark progression through the different spaces until reaching the limit where the body cannot support the heat anymore, could be compared to the human prenatal experience of being in the mother’s womb environment: warm, humid and dark. This metaphor reminds us of our human condition: our physical condition is immediately linked to our imaginative and interrogative mind, as much in space (building and outside) as in our spiritual life (past and future). Hence the hammam is considered as a life renewal experience for those who use it regularly.

**From Physical to Ritual Dimension**

Hammām are facilities that are frequently located next to mosques because of the need to wash the body and carry out ablutions before praying. It is therefore linked to strong religious rituals: ritual of daily prayers, ritual of the Friday prayer, ritual of the Thursday bath, pre-nuptial ritual, Ramadan ritual etc. The ritual is built around natural elements: the grotto-like environment of the hammām, the flowing water, the fire and the steam, the human body (mind and spirit).

The spatial organization and the progression from the street to the extreme hot-humid area are structured around the following sequences: undressing inside the entrance lobby, staying in tepidarium, crossing the calidarium and mixing “à la carte” individual attitudes and meeting people. The spatial environment freely meets everybody’s needs. However, the hammām hygienic function seems to have become stronger than its ritual function, and stronger than its own spirit.
Conclusion

The observation, analysis and comparison of these hammāms help to develop an understanding of the passive architecture specificities of each hammām according to the city where it is located. This fact emphasizes the basic internal climatic dimension of these buildings.

Today, the world in general and countries in arid and semi-arid climates in particular are facing environmental, energy and water supply problems. Studying these types of buildings helps to understand and face the problems of natural resources in the near future by delivering innovative solutions. For example, if energy resources can be found in the reuse of wooden materials or of agricultural waste, possibly with a combination of local solar potentials, the energy consumption of the hammāms could be carefully addressed. However, water can become a real issue in dry climates regions such as Damascus (218 mm) and Ankara (345 mm).

From the mid twentieth century, there has been a deep evolution in ways of life, mentalities, mixing of cultures, tourism influences and private bathroom facilities in housing. These have had a deep impact on the “hammām world” mainly due to the important place it has had in the mind and life of people living in the historic cores of Islamic cities. A number of questions are raised in relation to the future of the hammām in the 21st Century What is the hammām for ? A taste ? A pleasure? A ritual? A forgotten habit? A luxurious facility product? A souvenir? A monument ? An exciting experience ? A patrimony ? (Bouillot 2007). Probably all these together are valid attributes.

Acknowledgements

“This article has been elaborated in the frame of the EU project “H.A.M.M.A.M, Hammām Aspects and Multidisciplinary Methods of Analysis for the Mediterranean Region”, n° 517704 for “Specific Targeted Research or Innovation Projects under the Sixth Framework Programme of the European Community (2002-2006)”.

References


Bouillot J. (2007). Presente e futuro degli hammam nel Mediterraneo, fra religione, cultura e turismo Il Progetto Sostenibile, Milano


------------------------

Jean Bouillot

Jean Bouillot is freelance architect practising in Beaune – France. From the seventies till to 1987, he has been working overseas in Lebanon, Syria and Iraq mainly, on tourism projects inside private offices, then in Togo and Niger; planning and housing programmes inside structures from French Ministry of the Cooperation. Since 1988, he is practising in France, with construction projects of bioclimatic buildings, new or retrofitting, on social and private housing, tourism and education.
programmes; in the same time developing a research activity in environment field, introducing to collaborate on larger development and planning programmes in Jordan (1999-2000) and China (2002-2005); this research activity is materialized with reference documents in the frame of international organizations privileging the sustainable development, as UIA and PLEA. Within H.a.m.m.a.m. sustainable development EU programme in the Mediterranean and diverse new and retrofitting projects in France.
AN INQUIRY INTO THE THERMAL, ACOUSTICAL, AND VISUAL ASPECTS OF INDOOR ENVIRONMENT IN TRADITIONAL HAMMĀMS

Ardeshir Mahdavi and Kristina Orehounig

Abstract
In the present paper, the authors focus on the indoor environmental performance of traditional Islamic hammām (bath) buildings. In the course of a long-term monitoring effort within the framework of an EU funded project (HAMMAM, 2008), data on indoor environmental (thermal) conditions and outdoor microclimatic conditions in the immediate vicinity of five traditional hammāms located in Egypt, Turkey, Morocco, Syria, and Algeria was collected. Moreover, short-term visual (lighting) and acoustical measurements were performed in a number of these buildings. The monitoring results provide the opportunity for an objective assessment of the actual performance of these buildings and evaluation of their strengths and weaknesses. In addition to evaluation and interpretation of indoor environmental conditions, the authors also used the monitored data to calibrate digital performance simulation models of the objects studied. These calibrated models of the hammāms can be applied to predict the consequences of alternative options for their renovation, restoration, reuse, and adaptation.

Keywords:
Traditional architecture; hammāms; indoor climate; diagnostics; simulation.

Introduction
The conceptual background of the research presented in this paper is based on the following three propositions:

i) Traditional buildings embody intelligent design features that have emerged through the long-term process of adjustment to local climatic conditions and social functions (Bahadori, 1979; Mahdavi, 1989, 1996, 2007).

ii) Investigation methods of modern building science (diagnostics, simulation) can be applied to tap into this encapsulated design knowledge of traditional architecture and provide a deeper understanding of the underlying strengths of environmentally adapted buildings, beyond typically available qualitative descriptions of the respective design strategies and features.

iii) Equipped with the knowledge of the original functions and workings of traditional buildings, modern methods, tools, and products of building science and technology can be effectively applied to support the processes of restoration and adaptation of such buildings.
The specific case in point is, in the present contribution, the traditional Islamic hammām (bath) building. Within the framework of an EU-supported research project (HAMMAM 2008), the authors collected data on indoor environmental (thermal) conditions and outdoor microclimatic conditions in the immediate vicinity of traditional hammams in Egypt, Turkey, Morocco, Syria, and Algeria over a period of one year.

Moreover, short-term acoustical and lighting measurements were performed in a number of spaces. The monitoring results allow for an objective assessment of the actual performance of these buildings and evaluation of their strengths and weaknesses. Using data visualization and performance analysis, it is possible to identify those design-relevant parameters (such as space layout and zonal sequence, thermal mass distribution, envelope and apertures, indoor surface properties, energy systems) that contribute to (and explain) such strengths and weaknesses in view of the related health and comfort implications.

In addition to the evaluation and interpretation of indoor environmental conditions, the monitored data were also used to calibrate digital performance simulation models of the buildings studied. These calibrated models of the hammāms were applied to predict the consequences of alternative options for their renovation, restoration, reuse, and adaptation. Thus performance implications of the utilization of modern technologies and products, in the culturally and historically sensitive context of traditional bath buildings, can be carefully scrutinized before such interventions are actually carried out.

### Table 1: Overview of the Selected Objects (name, code, location, century of origin, total net floor area).

<table>
<thead>
<tr>
<th>Hammām</th>
<th>Code</th>
<th>Location</th>
<th>Century</th>
<th>Floor Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bab el Bahr</td>
<td>BAB</td>
<td>Cairo, Egypt</td>
<td>19</td>
<td>190</td>
</tr>
<tr>
<td>Şengül</td>
<td>SEN</td>
<td>Ankara, Turkey</td>
<td>16</td>
<td>670</td>
</tr>
<tr>
<td>Saffarin</td>
<td>SAF</td>
<td>Fez, Morocco</td>
<td>14</td>
<td>380</td>
</tr>
<tr>
<td>Souq El Ghezal</td>
<td>SEG</td>
<td>Constantine, Algeria</td>
<td>18</td>
<td>200</td>
</tr>
<tr>
<td>Ammuna</td>
<td>AMH</td>
<td>Damascus, Syria</td>
<td>13</td>
<td>95</td>
</tr>
<tr>
<td>Bougouffa</td>
<td>BOU</td>
<td>Constantine, Algeria</td>
<td>18</td>
<td>80</td>
</tr>
<tr>
<td>Belebdjaoui</td>
<td>BEL</td>
<td>Constantine, Algeria</td>
<td>18</td>
<td>130</td>
</tr>
</tbody>
</table>

(Source: Authors)

### Approach

#### Buildings

Table 1 provides an overview of the selected buildings. Thermal measurements were performed in the following buildings: Bab el Bahr (BAB), Şengül (SEN), Saffarin (SAF), and Souq El Ghezal (SEG). Acoustical measurements were performed in the spaces of SAF, SEG, Ammuna (AMH), Bougouffa (BOU), and Belebdjaoui (BEL). Visual (lighting) measurements were performed in buildings BAB, SEN, SAF, AMH, and SEG. While each of these hammams has a distinct architectural layout (varying number and sequence of rooms), a number of similar room functions can be found in most hammāms. However, space naming conventions are different in various countries and in the pertinent literature. In the present paper we specifically deal with four recurrent kinds of spaces, namely: changing room (CH), cold room (CR), warm room (WR), and hot room (HR).

#### Thermal Performance
We equipped the selected hammams with diagnostics equipment for long-term external and internal climate monitoring. Data loggers were installed in various rooms of the hammâms (see Figure 1). These recorded continuously (every five minutes) indoor air temperature, relative humidity, and illuminance. A weather station was installed in proximity of each hammâm to monitor outdoor air temperature and relative humidity, global horizontal irradiance, and wind speed (Figure 2). Collected data was analyzed in view of the buildings’ thermal performance, comfort...
conditions, transition between various spaces within the hammām, and the dependency of indoor climate on outdoor environmental parameters.

As mentioned earlier, simulation models of the selected objects have been generated that, upon calibration (based on measured data), allow for the examination of possible retrofit measures. Simulations are performed using a commercially available application (EDSL 2008). In the present paper, we consider a simulation model of the Cairo hammām that was generated using the building’s geometry together with material assumptions based on authors’ observations at the site. Model input assumptions regarding heating energy, internal gains (occupants, lighting, equipment), ventilation, and their respective schedules were based on a rough survey conducted by the local research partners and additional information collected during the site visit. The initial simulation results (e.g. indoor air temperature values) can then be compared to the measurements, leading to a calibrated version of the simulation model. Using such a calibrated model, alternative scenarios for the thermal improvement of the building can be assessed and evaluated. In the present paper we focused on three scenarios (see Table 2). The first scenario represents the existing conditions. The second scenario involves the improvement of the thermal insulation of the roof and parts of the external wall areas. Scenario 3 involves, in addition, the use of double-glazing (instead of the existing single-glazing) for windows (changing room) and roof apertures (cold room, hot room). The U-values of the relevant building envelope components for the respective scenarios are summarized in Table 2.

<table>
<thead>
<tr>
<th></th>
<th>S1</th>
<th>S2</th>
<th>S3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roof</td>
<td>1.76</td>
<td>0.2</td>
<td>0.2</td>
</tr>
<tr>
<td>Walls</td>
<td>1.13</td>
<td>0.22</td>
<td>0.22</td>
</tr>
<tr>
<td>Glazing</td>
<td>5.75</td>
<td>5.75</td>
<td>1.36</td>
</tr>
</tbody>
</table>

Table 2: U-value Assumptions of the Pertinent Building Components for Thermal Simulation Scenarios S1 to S3. (Source: Authors).

**Room Acoustics**

Frequency-dependent reverberation times were measured in the objects SEG, BEL, and BOU. Reverberation time measurements were conducted in empty (non-occupied) conditions. In addition, ambient sound levels were measured in AMH and SAF. During these measurements, the respective spaces were in use. It is important to note that the latter measurements were conducted on a short-term basis. Thus, they provide a snapshot of the prevailing ambient sound levels and are not representative in strict statistical terms.

Measured ambient sound levels and reverberation times were evaluated. Specifically, measured reverberation times were compared with pertinent target values. Toward this end, desirable ranges for the selected objects (space function, space size) were needed. This is, however, not trivial, as the use patterns of the spaces are, in this case, not clearly stated. On the one hand, speech intelligibility would be desirable, given the social (communication) function of such spaces. On the other hand, a certain impression of reverberant field in these spaces is naturally expected (given the volume and surface properties) and probably
appreciated. Moreover, people sometimes sing in traditional hammāms. Given these considerations and upon consultation of pertinent literature (see, for example Fasold, 2003), target values were assumed for the selected object as 1.1 seconds for SEG and 1.0 second for BEL and BOU.

<table>
<thead>
<tr>
<th>Simulation Condition</th>
<th>Frequency [Hz]</th>
<th>125</th>
<th>250</th>
<th>500</th>
<th>100</th>
<th>2000</th>
<th>4000</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td></td>
<td>0.03</td>
<td>0.03</td>
<td>0.03</td>
<td>0.04</td>
<td>0.05</td>
<td>0.05</td>
</tr>
<tr>
<td>A2</td>
<td></td>
<td>0.15</td>
<td>0.19</td>
<td>0.29</td>
<td>0.46</td>
<td>0.58</td>
<td>0.7</td>
</tr>
<tr>
<td>A3</td>
<td></td>
<td>0.64</td>
<td>0.87</td>
<td>0.84</td>
<td>0.62</td>
<td>0.47</td>
<td>0.5</td>
</tr>
</tbody>
</table>

Table 3: Absorption Coefficient Assumptions for the Acoustical Simulation Conditions A1 to A3. (Source: Authors).

Calibrated simulation models were also generated in the acoustical domain. Toward this end, reverberation times were simulated for three buildings (SEG, BEL, BOU). Simulations were performed using a commercially available room acoustical simulation and auralization tool (Christensen, 2005). The simulation input data assumptions concerning the absorption coefficient data for surface finishes were based on various sources of information available (architectural documentation, plan documentation, literature, simulation tool’s database). Measured reverberation times were also compared with simulation results to determine the extent of simulation errors. To further investigate acoustical improvement possibilities (mainly the reduction of the reverberation times) using the calibrated simulation models, two different acoustical absorption measures were considered. Thereby the surface finish of a 20 m2 wall segment of the hot room (HR) in hammām BOU was modified in the simulation model. Table 3 shows the assumed absorption coefficients of this wall segment for the status quo (A1) and the two simulated modifications, involving a moisture-resistant acoustic plaster (A2) and a broad-band acoustical absorber system (A3).

Visual Aspects
During the site visits, spot measurements of horizontal illuminance levels and daylight factors in a number of rooms of some of the selected hammāms were performed. Horizontal illuminance was measured at a height of about 1 meter above the floor level.

Results

Thermal Conditions
Table 4 provides an overview of the hygrothermal conditions in the selected objects based on monitoring period of approximately one year. It shows minimum, mean, and maximum monthly indoor and outdoor temperatures for objects BAB, SEN, SAF, and SEG, as well as indoor relative humidity values. Indoor parameters are given for changing room (CH), cold room (CR), warm room (WR), and hot room (HR).

As Table 4 suggests, indoor temperatures in hot room and warm room do not vary as much as those in changing room. Thus, Figures 3 to 6 focus on the thermal comfort conditions in the latter space. Thereby, hourly temperatures for four different months (January, March or April, July, and October) in changing rooms are plotted in psychometric charts. Note that these graphs also show the ranges of desired indoor temperatures in the respective months as implied by the adaptive thermal comfort theory (Szokolay, 2004).
To explore the thermal transition in the course of progression from one space of the hammām to another, Figures 7 to 10 show the mean monthly indoor temperatures (for four different months) in changing room, cold room and/or warm room, and hot room.

<table>
<thead>
<tr>
<th>Location</th>
<th>Condition</th>
<th>Minimum</th>
<th>Mean</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Mean</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAB</td>
<td>CH</td>
<td>20.9</td>
<td>26.5</td>
<td>31.2</td>
<td>47</td>
<td>61</td>
<td>76</td>
</tr>
<tr>
<td></td>
<td>CR</td>
<td>20.8</td>
<td>27.3</td>
<td>32.2</td>
<td>94</td>
<td>99</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>HR</td>
<td>28.6</td>
<td>32.1</td>
<td>36.9</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>EX</td>
<td>12.9</td>
<td>24.4</td>
<td>34.8</td>
<td>24</td>
<td>49</td>
<td>75</td>
</tr>
<tr>
<td>SEN</td>
<td>CH</td>
<td>16.3</td>
<td>24.2</td>
<td>29.5</td>
<td>38</td>
<td>52</td>
<td>66</td>
</tr>
<tr>
<td></td>
<td>WR</td>
<td>23.9</td>
<td>28.6</td>
<td>32.0</td>
<td>98</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>HR</td>
<td>34.2</td>
<td>36.0</td>
<td>37.6</td>
<td>87</td>
<td>95</td>
<td>98</td>
</tr>
<tr>
<td></td>
<td>EX</td>
<td>-1.2</td>
<td>14.6</td>
<td>33.8</td>
<td>16</td>
<td>49</td>
<td>88</td>
</tr>
<tr>
<td>SAF</td>
<td>CH</td>
<td>13.8</td>
<td>21.7</td>
<td>29.4</td>
<td>47</td>
<td>59</td>
<td>76</td>
</tr>
<tr>
<td></td>
<td>WR</td>
<td>29.1</td>
<td>31.1</td>
<td>33.1</td>
<td>73</td>
<td>96</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>HR</td>
<td>30.6</td>
<td>33.3</td>
<td>36.5</td>
<td>93</td>
<td>99</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>EX</td>
<td>6.4</td>
<td>21.3</td>
<td>36.4</td>
<td>19</td>
<td>52</td>
<td>89</td>
</tr>
<tr>
<td>SEG</td>
<td>CH</td>
<td>13.5</td>
<td>19.2</td>
<td>28.0</td>
<td>53</td>
<td>76</td>
<td>94</td>
</tr>
<tr>
<td></td>
<td>CR</td>
<td>15.9</td>
<td>20.3</td>
<td>28.0</td>
<td>93</td>
<td>97</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>HR</td>
<td>32.9</td>
<td>35.4</td>
<td>38.3</td>
<td>95</td>
<td>99</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4: Minimum, Mean, and Maximum Measured Average Temperatures during Observation Period. (Source: Authors).

Figure 3: Depiction of indoor climate conditions in the changing room in BAB for July and October 2006, January and April 2007, compared to Standardized Effective Temperature SET for each month. (Source: Authors).

Figure 4: Depiction of the indoor climate conditions in the changing room in SEN for July and October 2006, January and March 2007, compared to Standardized Effective Temperature SET for each month (Source: Authors).
Figure 5: Depiction of the indoor climate conditions in the changing room in SAF for October 2006, January, April and July 2007, compared to Standardized Effective Temperature SET for each month. (Source: Authors).

Figure 6: Depiction of the indoor climate conditions in the changing room in SEG for July and October 2007, January and April 2008, compared to Standardized Effective Temperature SET for each month. (Source: Authors).

Figure 7: Temperature Transition between Spaces in BAB (mean monthly values during opening hours). (Source: Authors).

Figure 8: Temperature Transition between Spaces in SEN (mean monthly values during opening hours). (Source: Authors).

Figure 9: Temperature Transition between Spaces in SAF (mean monthly values during opening hours). (Source: Authors).

Figure 10: Temperature Transition between Spaces in SEG (mean monthly values during opening hours). (Source: Authors).
To compare the predictions of the calibrated simulation model with the measured values, Figure 11 depicts simulated and measured indoor air temperatures in two spaces in hammām BAB, namely changing room and hot room for a reference day in July. Note that this figure includes also the respective measured outdoor temperature values. Figure 12 shows a comparison of simulated space heating demand of hammām BAB for three different scenarios (see Table 2). The first scenario represents the existing conditions. The second scenario involves the improvement of the thermal insulation of the roof and parts of the external wall areas. Scenario 3 involves, in addition, the use of double-glazing (instead of the existing single-glazing) for windows (changing room) and roof apertures (cold room, hot room).

Acoustical Conditions
Table 5 summarizes spot measurement results of the A-weighted overall ambient sound levels in the spaces changing room, warm room, and hot room in two hammāms.

<table>
<thead>
<tr>
<th>Ambient Sound Level (dB)</th>
<th>CH</th>
<th>W4</th>
<th>HR</th>
<th>SAF</th>
<th>64</th>
<th>74</th>
<th>82</th>
<th>AMH</th>
<th>61</th>
<th>57</th>
<th>52</th>
</tr>
</thead>
</table>

Table 5: A-Weighted Ambient Sound Pressure Level in SAF and AMH. (Source: Authors).

Figure 13 illustrates the measured reverberation times in three objects (SEG, BEL, BOU). Figure 14 shows the comparison of simulated reverberation times in hot room of object BOU for three different conditions (see Table 3). The first condition represents the status quo. The second condition involves the treatment of parts of the wall surface with a humidity-resistant acoustic plaster. The third condition involves the treatment of the same wall surface area with an alternative (broad-band) acoustical absorber. The respective absorption coefficient values are shown in Table 3.
Visual Conditions
The results of horizontal illuminance measurements (in lx) in objects BAB, SEN, SAF, AMH, and SEG are shown in figures 15 to 18 and 20. Note that these results are of indicative character as they reflect the combined effect of daylight (at the time of the measurements) and electrical lighting (default operation mode). The results of daylight factor measurements (in %) in objects SEN and SEG are shown in Figures 16 and 19. Daylight factor denotes the measured ratio of indoor to outdoor horizontal illuminance in percentage.
Figure 17: Results of Horizontal Illuminance Measurements in Hammām Saffarin November 2006 9:00 (in lx). (Source: Authors).

Figure 18: Results of Horizontal Illuminance Measurements in Hammām Ammuna February 2007 10:30 (in lx). (Source: Authors).

Figure 19: Results of Daylight Factor Measurements in Hammām Suq El-Ghezal May 2007 7:30 (in %). (Source: Authors).

Figure 20: Results of Horizontal illuminance Measurements (daylight and electrical light) in Hammām Suq El-Ghezal May 2007 7:30 (in lx). (Source: Authors).
Discussion

Thermal Issues

Our results display a wide range of hygrothermal conditions in hammām spaces over the course of the observation period. They clearly demonstrate, thus, that a reliable evaluation of indoor conditions in such buildings cannot be based on short-term spot measurements. Rather, substantiated judgments can be made only based on continuous monitoring of the indoor conditions over a longer period of time.

Hot rooms in all observed hammāms provide a fairly stable and appropriate temperature range throughout the year (see Table 4). Changing rooms and – to a lesser degree – cold rooms, however, display at times temperature ranges that would not be thermally appropriate for lightly clothed users. Specifically, cold rooms of the objects BAB and SEG are not heated. Likewise, the changing room is heated only in SEN and – minimally – in BAB. Figures 3 to 6 were generated to further explore the widely fluctuating temperature ranges (and the thermal comfort ramifications) in the changing rooms of the hammāms. These figures imply a relative good match between existing and desirable indoor conditions in BAB and SEN. Thermal conditions in changing room SAF and SEG are, however, problematic, especially during the winter period, when they remain unheated.

Gradual temperature progression (i.e., increasing ambient temperature as one moves from changing room to hot room) in spaces of hammām has been regarded as an important feature of the thermal environment in these buildings. Consequentially, we examined our monitored data to see if, and to which extent, such transition is evident. We found clear evidence for such transition in the hammāms BAB and SEN (see Figures 7 and 8). In SAF (see Figure 9), a gradual transition can be observed
only within a rather narrow thermal range: the major temperature gradient exists between the changing room and the heated spaces. A real transitional pattern is de facto absent in SEG (see Figure 10), as no noteworthy difference in temperature between the changing room and the cold room can be observed.

Illustrative instances of thermal performance improvement possibilities are shown in Table 2. According to simulation results, better insulated roof and walls lead to a lower space heating demand (particularly in hot rooms). Improvement of glazing does not influence the energy demand of hot room and leads only to minute demand reduction in cold room and changing room.

**Acoustical Issues**
The spaces studied make a predominantly reverberant and – when occupied – loud impression. The measured reverberation times are drastically longer than assumed target values (particularly in the lower frequency range), as mentioned in section 2.3. Note that this conclusion is valid despite the fact that the reverberation time measurements were conducted in empty conditions: the sound absorption effect of unclothed occupants is rather small. The perception of loudness is corroborated by the snapshot measurements of ambient sound levels (see Table 5).

Acoustically hard room enclosure surfaces and relatively large (sparsely furnished) volumes represent the main reasons for these conditions. Smooth and hard surfaces have been naturally applied in highly humid spaces as they can withstand water and moisture impact and are relatively easy to cleanse. However, they typically possess low absorption coefficients and are thus highly reflective acoustically. Even though special types of acoustically more effective plasters can increase the absorption (see, for example, case A2 in Table 3 and Figure 14), the overall result may still not be satisfactory, if the absorption effectiveness is not broadband and occurs only selectively for certain – in this case higher – frequencies. The application of a broad-band absorber system (see Table 3, case A3) has a better potential to provide acoustically preferable conditions (see Figure 14).

**Visual Issues**
Our illuminance and daylight factor measurement results imply rather low light levels in the selected objects (see Figures 15 to 20). It has been argued, that mild and dampened light levels are an intrinsic feature of indoor spaces in hammāms and are to provide a welcome contrast to the typically harsch outdoor lighting circumstances in many countries were hammāms were constructed. However, some of the currently prevailing low daylight levels do not seem to be the result of original design intentions. In fact, our observations revealed that in some hammāms the original roof apertures (openings) for daylight were occasionally blocked ex post facto. This means that in some hammāms the originally planned daylight penetration (and in certain cases the ventilation possibility) were compromised later on (see, for example, Figure 21, for a view of the HR of a hammām in Fez (Morocco) with almost entirely blocked daylight apertures). The addition of the “modern” electrical lighting components – necessary for the night operation of the hammām – are in all objects we studied neither sensitive architecturally, nor appropriate from the illuminating engineering point of view (see,
as an example, Figure 22 with the view of CH in hammām BAB).

**Conclusion**

There is a concern that traditional hammām buildings in the Islamic countries are in decline. To explore the possibilities for sensible conservation of these buildings and their continued use in terms of their original functionality requires careful study of the status quo and analysis of appropriate preservation and renovation measures.

In this context, the present contribution provided a summary of monitoring results pertaining to the thermal, acoustical, and visual conditions in a number of traditional hammams.

Hygro-thermal conditions in hammāms vary considerably over time and space, implying the importance of long-term measurements. We established that hot rooms in all observed hammāms provide fairly stable and appropriate thermal conditions, where as changing rooms and cold or warm rooms could be at times (particularly in the winter period) thermally uncomfortable. An evidence for the existence of a kind of thermal progression (sequence) could be found in most – but not all hammāms.

From the acoustical point of view, a certain level of reverberation is both appropriate and expected from traditional hammāms, providing them with a characteristic perceptual “feeling” of the spaces. However, the hammām spaces we studied may be said to offer too much of a good thing in this regard: They make a predominantly reverberant and, in part, overly loud impression due to the abundance of hard room enclosure surfaces and the rather sparse furnishing. Such conditions are the result of construction requirements in highly humid spaces. Building elements must withstand water and moisture impact and should be relatively easy to cleanse.

Visual conditions in some hammāms we studied are sub-par, both due to ungainly interventions in the workings of the original daylight apertures and due to deficient “modern” electrical lighting devices.

In addition to analyzing the measurements, we also explored the potential of the application of digital performance simulation models toward the evaluation of possible thermal and acoustical retrofit measures. We demonstrated that the measured data could be used to calibrate such digital simulation models in order to increase the reliability of their predictions. Specifically, we illustrated the application of a calibrated simulation model of the Cairo hammām (BAB) to evaluate the energy implications of thermally improving the building’s envelope. Likewise, we used a calibrated acoustical model of Bougouffa hammām (BOU) to simulate the effect of acoustically more effective plasters on the reverberation times. Future efforts will involve a consistent use of such calibrated simulation models toward the comparative evaluation and optimization of proposals for the improvement and renovation of traditional hammām buildings.

**Acknowledgements**

This research is supported, in part, by a European Union grant; project: “Hammām, Aspects and Multidisciplinary Methods of Analysis for the Mediterranean Region”, FP6-2003-INCO-MPC-2, contract no: 517704. Scientific
coordinator: OIKODROM, Vienna, Austria.

References


------------------------------------

Ardeshir Mahdavi

Professor Dr. A. Mahdavi is the director of the Department of Building Physics and Building Ecology at the Vienna University of Technology in Austria. His research activities cover a wide spectrum of work in building science, including building physics, computational building performance simulation, building automation, building ecology, human ecology, and sustainable architectural design. Professor Mahdavi has acted as the PI of a large number of national and international scientific research projects. He is a frequent keynote speaker at international scientific conferences and has authored over 400 publications in scientific conference proceedings and journals. In the years 2006 and 2007, Professor Mahdavi has been consecutively awarded the “Austrian Building Award” in the research projects category.

------------------------------------

Kristina Orehounig

Kristina Orehounig is University Assistant at the Department of Building Physics and Building Ecology at the Vienna University of Technology in Austria and holds a Master degree in Architecture. Currently she is writing on her Ph.D. thesis concerning scientific analysis and evaluation of the traditional (environmentally adapted) Architecture. In the year 2007 Ms Orehounig received the Archdiploma Award for her Master thesis regarding cooling methods in office buildings. Ms Orehounig has also received “Austrian Building Award 2006” in the diploma thesis category. Her research interests include building physics, computational building performance simulation, and passive architecture.
A CONTEMPORARY HAMMĀM: WELLNESS CENTRE IN BODRUM, TURKEY

Ahmet ğdirdiligil

Abstract
The article presents and reviews the design of a contemporary hammām and wellness centre in Bodrum, Turkey. The project conceived in Ortakent (near Bodrum), was designed to serve mainly tourists during the summer holiday season and residents of the region in the off-season periods. The complex consists of the main component; the hammām, and also includes other components such as a sauna, steam bath, massage parlour etc. The design concept provides flexibility and adaptability to allow the fluctuations caused by seasonal variations in both type of activities and the frequency of usage during the intended year-long operations of the facilities. The ground floor, where the administrative section is located, has been architecturally designed with integral solar energy panels in order to offset a very significant portion of energy expenditures, which constitutes an important part of the total operating costs of the complex. Water re-use and local construction materials are used in this project. In essence, this project attempts to offer new solutions and opportunities for architects and designers to improve the performance of contemporary building in order to reach an optimum of sustainability levels for the building. It combines modern technology and architectural techniques adapted to the hammam spaces and ambiances. The design is inspired from traditional architectural concepts adapted to today’s technological developments.

Keywords:
Contemporary hammām, wellness eco-tourism, modern baths architecture, sustainability.

Introduction
Located on the shores of the Aegean Sea in the southwest corner of Turkey, the Bodrum peninsula is among the most popular holiday destinations in the country. The permanent population of the peninsula grows by a factor of 4-5 in summer months due to the influx of both foreign and domestic holidaymakers.

Project Brief
The project of the “hammām-complex” presented here was conceived to serve mainly tourists during the summer holiday season and local residents during the off-season periods when the influx of visitors decline. The complex was designed to be accommodated on a 6000m2 plot of land. It is owned by an investor in the Ortakent-Müşkebi region, which lies at the geographic centre of the peninsula.

In addition to the hammām which is the main component of the complex, other facilities
compose the wellness centre (Figure 3), and are as follow:

- A sauna, steam bath, and various massage facilities
- A beauty and cosmetics salon
- A multi-purpose venue, where yoga and meditation can be practiced or meetings and seminars can be held
- A central courtyard with a pool
- A café/restaurant, and
- An administrative block for offices

Figure 1: Site View (Source: ğdiriligil, 2006).

Figure 2: Hammâm Complex Site Plan (Source: ğdiriligil, 2006).

Figure 3: First Floor Plan of the Project- Spaces and Functions. (Source: ğdiriligil, 2006).

Figure 4: Aerial 3D View of the Complex. (Source: ğdiriligil, 2006).
Problem Definition and Solutions

Taking into consideration seasonal variations in both types of activities and the frequency of usage during the intended yearly operations of the facilities, the design concept provides flexibility to allow these fluctuations. For example, the washing facilities of the hammām have been divided into two separate sections. This division allows one section to operate independently from the rest of the complex during the off-season periods. Thus, it will provide significant energy and labour savings, since there is only one section being used, and hence only one section needs heating and cleaning.

For the same reasons the sauna has been designed as two separate sections rather than one large venue. The main aim of this separation and division is to permit the independent flawless functioning modes of the various sections of the complex, while preserving the overall scale even when some units are not in use.

An extensive use has been made of readily installed/removed separator modules which, for example, allow variations in number and size of a venue to accommodate tourist groups coming for massage. On the other hand, a different installation of the separators will allow larger spaces to be created for such activities as table tennis, fitness exercising venues, gymnastics or yoga which are more often practiced by local winter residents.

Sliding glass panels which separate the outdoor central courtyard from the surrounding covered corridor, allow flexibility in the use of the combination of interior and exterior spaces, an important factor in a climate amenable to outdoor living at least seven months of the year (figure 5).

The integration in the general street plan and the external appearance of a traditional hammām (mainly because of its domed roofing), has always distinguished it from among all nearby structures, making it readily identifiable for its function. Additionally, traditional hammāms are inward-oriented or intra-muros, shielding the interior from the outside world.

The Ortakent Hammām Complex design adheres to these historic distinguishing marks, making the building recognizable as such even from a distance. This is achieved first by the high stone walls of the hammām units on the street side which serve to screen out external noise and give privacy to the activities in the open-air central courtyard and the surrounding space (figure 6). Distinctive visual recognition is further attained by incorporating the highly symbolic hammām domes (cupolas) with their characterized embedded translucent hemispherical glass ports. These latter ones admit soft natural light to bathe the interior in an aura of leisure and tranquillity, as it used to be in the old traditional hammāms of the Islamic world.
The ground floor, which also includes the administrative offices of the establishment, has been architecturally designed with integral solar energy panels in order to offset a very significant portion of the energy expenditures which form a large part of the total operating costs of the complex. Water used in the whole facility will be treated in a biological waste-water treatment plant within the establishment and reused, thus permitting important savings in water consumption which is most significant in a region known for its scarce water resources, providing additional economic and ecological benefits. Native stone will be the construction material for the hammām, while light materials such as wood and glass steel will be used to build the remaining sections.

**Summary**

The main roles of the hammām in the Mediterranean region, has been to provide a venue for people to keep their bodies clean, and to socialize in circumstances where very few homes had bathing facilities. In the modern era where bathrooms are common, the personal hygiene function of the hammām may no longer be a priority, but the institution itself remains a highly attractive health-oriented social place, especially for tourists.

While some individual visitors may prefer the ambience of the old historical hammām, of which very few remain in existence, tourists coming in groups are usually conducted on organized tours which, aiming to satisfy varied interests, require the addition of a broad range of activities to the traditional hammām concept. So besides body cleansing, sweating and the rub-down with kese the visitor is free to choose the sauna, have cosmetic beauty treatment, body care, manicure or pedicure, as well as enjoy food and drinks available on the premises and thus spend the whole day in an enjoyable relaxing environment.

Figure 6 a. and b.: 3D Model Views of the Hammām Unit from the Main Street Side (Source: Ğdiriligil, 2006).

The Turkish public’s continued fondness for the traditional hammām also includes the consumption of food and beverages, though in recent years, physical exercise and sport activities have gained importance. In summary, a hammām facility designed to cater for the
modern public has to include all of these considerations. The family social structure that has undergone transformation, at least since the 19th century, continues change with weakening of familial bonds. It seems desirable to provide venues and spaces which will be attractive to whole families for weekends and holidays thereby strengthening social cohesion. As a result of this, newly designed hammām facilities will inevitably differ from the traditional ones.

These differences will find expression in the architectural solutions chosen to accommodate the addition of new activities to the core hammām function. Hence, taking all these factors into consideration, the project presented, was designed using natural stone in the hammām structure and, incorporated the distinctive domes, as seen in traditional historical practice. In order to house other activities to take place within the hammām complex, we have resorted to contemporary building materials such as steel, glass or plywood, emphasizing lightness of structure and versatility. The choice of materials responded to the architectural expression of the old hammām tradition rooted deeply in history and yet modified to incorporate new contemporary requirements.

References


---------------------------------------------

Ahmet ğdirligil
Ahmet ğdirligil is graduated M. Architect in 1983 from M. Arch Mimar Sinan University in Istanbul, Turkey. After working with Arch. Şevki Pekin, in Istanbul, and Prof. Rolan Rainer’s Architectural office in Vienna, he received Encouragement Award from the “Foundation for The Protection of Monuments and Environment in Turkey”. In 1983, employed with Arch. Walter Steizhammer, he began Ph.D. research for thesis in Vienna Technical University (1984). Relocated to Bodrum (1989), he founded Şans Architectural Office. In addition to architectural design and application published in number of journals, he participates to conferences and seminars, delivering lectures in national and international institutions. Specialist in building stone houses and in restoration, he is also consultant for national and international Hammam, Spa and thermal care centers. He participated and accomplish Hammam specific journeys and studies under the EU - Project “Hammam Aspects and Multidisciplinary Methods of Analysis for the Mediterranean Region” between 2005-2008.
THE MEDINA, THE HAMMĀM AND THE FUTURE OF SUSTAINABILITY

Richard S. Levine, Michael T. Hughes, and Casey Ryan Mather

Abstract

The Islamic Mediterranean city faces increasing pressures from without and within. It is faced with the question of how to support the valued institutions and traditions of the past, while confronting the influences and pressures of the present and the opportunities of the future. The hammām has been centered on a venerable tradition from the past that is both a building as well as a cultural tradition and that is trying to survive in a modern world. Hence, each of these historic building should be seen as cultural heritage sites. One of the given aspects of this study has been the question of conservation and preservation of these once elegant buildings, the hammāms.

Strategies for the restoration of these buildings thus become the precondition for many of our other considerations. At the opposite extreme of building restoration considerations is the question of sustainability. Therefore the other major issue looked at in this study is: how can we develop scenarios that propose a sustainable future for these hammāms. Scenarios that are both respectful and supportive of the historic local culture yet also create a viable strategy for developing a sustainable mode of contemporary life. It was the ambitious charge of our research to explore the territory between these two questions.

Keywords:
Medina, hammām; mediterranean; sustainability.

Introduction

In a rapidly changing, “globalized” world, all existing institutions are being challenged. In developing countries and traditional societies these new outside pressures can be quite threatening to established values and ways of life. The widespread theory, particularly as it has been foisted upon developing countries, has been that a country either sign on to the program of globalization or it will be left behind; it either makes the required “structural adjustments” and reforms its laws and institutions to support the globalization of its economy or its economy will decline and be relegated to poverty and the backwaters of history. The supposed benefits to signing on to the “Washington Consensus,” include a rapidly growing economy as multinational corporations gain access to the local economy and build factories, provide jobs, increase trade both exports and imports, and create new wealth that rapidly raises living standards. Unfortunately, to the dismay of many
developing countries that have succumbed to the temptations of corporate capitalism, the outcomes have often been quite different. The more common effect has been a degradation of the environment and the exploitation of natural resources, greater wealth for the few, but greater poverty for the masses, and perhaps most disturbing of all, the loss of local values and traditions without there being any meaningful replacement. The recent massive collapse of U.S. markets and financial institutions and the ways in which this collapse has telescoped through the world’s economies has precipitated the almost instantaneous death of the previously universal assumptions of global capitalism. While modernization where it has occurred has brought with it a surge of rising expectations among the people for a better life, any small benefits that have been won are accompanied by a constellation of new problems that have not been seen before and for which there seems to be no solution. It is no wonder that in the Islamic world where Western style modernization has threatened and weakened traditional values and practices, there is a growing sense of resentment and alienation. With the American system now discredited as a model as well as a path for development, a new space of opportunity is opened for development in the Islamic world.

The above issues are a long way from the initial concerns of the HAMMAM project. If the global pressures of corporate capitalism are thought of as a “top-down” phenomenon, then the HAMMAM project should be thought of as a “bottom-up” endeavor. “Bottom-up,” because in each of the case studies selected, the study started with an elegant, albeit modest building which presence in the urban environment has been on the decline. Hence and as a beginning point, the following question was asked: “What positive influence can a program starting with the hammām and its uses have in influencing the immediate neighborhood and beyond?” How can the hammām, both the building and its societal and functional role, be the catalyst for value-rich societal as well as urban evolution?

Looking to the Traditional Medina as a Proto-Sustainable Model

It is increasingly acknowledged that the most harmful and most dangerous contributions to the unsustainability of the planet have come from the most “advanced” countries—Western Europe and even more so the United States, and that the greatest harm is being visited upon the environment through exploitation by corporate capitalism. It is also true that the lowest per capita load on the environment comes from those developing countries that have not yet fully succumbed or fully succeeded in adopting the Western program of globalization. What is largely missing from the development discussion is that these traditional cultures, having developed over centuries and having retained many of their original patterns and structures, are a lot closer to a sustainable relationship with their environment than are modern “advanced” nations. As every historic town and city had of necessity developed and maintained a balanced relationship with the resources gathered from its surrounding countryside, nearly sustainable resource patterns were always a precondition for long term survivability. These patterns of resource use over hundreds of years would become
embedded in the local craft traditions and the local culture. In a world that has long since abandoned the ancient wisdom embodied in traditional cultures and replaced it with a system of temporary prosperity but longer term unsustainability, there is much to learn from these traditional patterns and wisdom traditions in our postmodern quest for sustainability.

It is always dangerous and of limited utility to rely on historic analogies and comparisons, yet at times they can act as short-cuts to rapidly understand and convey complex ideas. As architects and urban designers, we have studied medieval Italian hill-towns in Europe as well as their southern Mediterranean counterpart, the Islamic medina. Over many years we have visited and lived in such towns and have been continually enamored by the urbanity and sheer beauty that are to be found in these places. For many years even foreigners have retired here, because of the way of life that is possible in these attractive, eminently livable towns. The buildings, the streets and piazzas have not been “designed” in the modern sense, but have evolved often over thousands of years and through a number of different cultures and historic periods. Through them all, the rich and varied urban fabric as it has been maintained and rebuilt has been highly responsive to human needs and evolving institutions. The modern embarrassment has been that we architects and urban designers have rarely been able to design streets, neighborhoods and cities with the same level of responsiveness, human accommodation or artfulness as is to be found in virtually every such medina and medieval settlement. Our particular field of study and expertise is in urban sustainability. It is not possible to think of either the European medieval town or the Islamic medina as projecting the issues and characteristics of sustainability: their history is too bloody, too often under despotic rule, oppression, inequality, exploitation, wars, disease and famine. But there is one characteristic they have had, and that is persistence. They have found a way to persist over hundreds and sometimes thousands of years, they become candidates for a new designation that of “Proto-Sustainability”.

Proto-Sustainability, as it has been used in this study, means that however the town has been governed or whatever inequities it has suffered over time, it has evolved a way of managing itself so that its material needs have been in balance with the resources it has husbanded and that this balance-seeking process has occurred almost entirely at the local level. In such places the great majority of food, fuel, water, building materials, and other goods and services, have been generated locally by locally-evolved farming methods and craft and service enterprises. These local services have also evolved in such a way that their mode of operation and their interaction within the whole urban-rural dynamic has found a way of maintaining a balance within the carrying capacity of the local environment. Amazingly, it would be difficult to find any town or city in the modern world that would be able to operate on the same basis. Of course, today everything is connected to everything else so there is seemingly no need or reason for any town to wish to operate on this basis. Over centuries we have evolved systems of transportation, communication and trade working through common currencies within a largely free market system that encourages specialization and makes it possible to produce goods almost anywhere and to purchase them virtually
anywhere as well.

Yet the challenge of sustainability or more precisely, the sustainable city-region is to forge a way – this time under the rule of social and environmental equity - where the given region, on a net basis, is again operating within its fair share of the earth’s bounty on a regenerative basis. As we have no modern models that we may observe where this condition prevails, it may be useful to observe those places where at least proto-sustainability may have been practiced. We have thus found it helpful to look to historic city-regions – the European medieval town and in particular within the HAMMAM project, the Islamic medina, for patterns and to seek clues as to how these material and energy balances may have been achieved in the past and how the network of human activities served to both work within the local carrying capacity as well as to maintain its balances, as a preliminary model of how we might begin to research a modern city-region able to demonstrate some of the same characteristics, but now propelled by the creativity of stakeholder participation and by equity in all its dimensions.

It is widely understood in the developed West that major structural changes will need to be instituted for towns and cities to be put on a sustainable course. But corporate capitalism, the “operating system” that drives the metabolism of our urban centers, has become fundamentally unsustainable. There are thus no existing models for how such a transformation might be accomplished or what the resulting system might look like. It is with this in mind that we have reason to turn to the Medinas of the developing world to examine the still existing life patterns that are remnants of a proto-sustainable past to research how they once worked and to project how an updated version of these successful metabolic processes might become the basis for a new sustainable city – both as a sustainability-oriented operating system, a sustainable urban form and a sustainable way of life.

The Hammām as a Grounding Point for Sustainability Studies in the Medina

Carrying out this line of inquiry led to prove the Islamic hammām as being an excellent grounding point to study sustainability in the medina. As one of the key elements and institutions in the historic Islamic city it is a useful tie-in to both the traditions as well as the urban form of the traditional city. Of the major institutions of the historic Islamic city that manifest as buildings with an urban presence, i.e. the mosque, the madrassa, the library and the hammām, the hammām is the most secular and also the most cryptic – the most hidden. Although the hammām is a large, elegant building with a complex architecture, magnificent spaces and an important communal function, it is often invisible in the city and its entrance is usually hidden on a back street or alley. It has no windows although glass globes, arranged in intricate geometries within networks of masonry domes and vaults, bathe the interiors with a glorious light.

In a very conservative culture, where in many places women are veiled and their presence in the public realm is still highly proscribed, the hammām presents the sort of activity and experience that is as essential as it is secret. The observant Muslim is obliged to do his or her ablutions before prayer – particularly before attending the Friday mosque. Islam is a religion
that stresses cleanliness of the body. So the traditional role of the hammāms has been a fundamentally religious one. But in spite of the deep modesty of the culture, the bathing function of the hammām is not a private one. Bodies are bathed and massaged by others, albeit others of the same gender, but others nonetheless. Bathers remove their clothes and wear only robes or towels. This is in stark contrast to how they appear in any public setting or even in the privacy of their family courtyard. This is such a departure from the mores of all other aspects of their daily lives that neighborhood women in our project have objected to hammām settings where it would be possible for a passerby to witness them entering or leaving the local hammām. This makes for the strange (to outsiders at least) situation where people – women especially – are comfortable when in public in their traditional dress, and in private, within the security of the hammām and all its activities, but in the boundary or transition between the two there remains a problem.

In fact, the very private nature of what goes on within the hammāms is also at times problematic. In these traditional towns and societies the possibility of privacy in a semi-private setting creates the prospect of what are considered locally to be illicit activities between consenting adults to take place behind closed doors. This creates the image, whether warranted or not, that the hammām is a place, or more specifically one of the few institutional places, where such activities could occur. If a particular hammām were to gain a bad reputation it could well be shunned by the local people. Even a bad reputation through rumors alone can be very damaging to both a hammām as well as the neighborhood in which it is located.

**The Space of the Hammām in the Medina**

The fact that the hammām is often a hidden building is not so unusual in an Islamic town or medina. The structure of the medina in many Islamic cities, as, for example, in Fez, is of a very dense, tightly packed system of courtyard dwellings organized along narrow streets or alleys. The streets are too narrow for cars and the major streets are lined with tiny shops. The courtyard houses are rather large with all rooms opening to the central court. There are few if any windows on the street. The entrances on the streets and alleys are usually small (even the entrances to the larger courtyards) and there is little if any public space outside the private or semi-private courtyards. The mosques and medrassas will have sometimes very large courtyards, but these are experienced as semi-public spaces with special entrance gates and are not experienced as being a part of the continuous public paths of the medina.

The medina of Fez does have a number of truly public spaces, but these all seem to be recent interventions carved into the much tighter historic urban fabric. As opposed to the occasional tea house, restaurant or café which operate as private businesses, in most places the hammām is managed privately, but owned by the waqf, a conservative, quasi-public, quasi-religious charitable organization with very old origins in Islamic culture. This ambiguous, in-between status gives the neighborhood and its citizens a sense of co-ownership in the hammām that other businesses and institutions do not have. This multiple identity makes the hammām amenable to become an institution as well as a place and a space in the neighborhood for congregation and for the focus of civil society.
processes. With a paucity of public space in the medina, the hammām, by being less constrained than the more religiously oriented institutional spaces, is poised to become a meeting place, where future-oriented, civil society processes could emerge. Such a role for the hammām was high on the agenda of the HAMMAM project. As the project unfolded, many alternative future scenarios emanating from the hammām as a starting point emerged through both expert-guided as well as parallel civil society processes. The scenarios generated from these trans-disciplinary processes presented sustainability-oriented benefits in the realms of economic development, as well as urban and architectural enhancement, social coherence and empowerment and environmental improvement.

The Threat of Globalization to the Traditional Medina

The Islamic city has survived many intrusions through history starting with the Roman and even earlier invasions and moving through various colonial and other hegemonic periods. Current southern Mediterranean cities, to the extent that they have come under the influence of globalist development, are under great threat. This threat has been well typified by Wendell Berry:

...when state and national governments begin to act in effect as agents of the global economy, selling their people for low wages and their people’s products for low prices, then the rights and liberties of citizenship must necessarily shrink. (such) A total economy is an unrestrained taking of profits from the disintegration of nations, communities, households, landscapes, and ecosystems. It licenses symbolic or artificial wealth to ‘grow’ by means of the destruction of the real wealth of all the world. (Berry, 2001)

In a report of the International Forum on Globalization entitled, Alternatives to Economic Globalization, the key ingredients of the globalization model are outlined as 1) hypergrowth, 2) privatization and commodification, 3) economic and cultural homogenization, and 4) export-oriented trade and investment (IFG, 2002). Of particular concern to the current discussion are hypergrowth and economic and cultural homogenization. Hypergrowth is necessary in the economic globalization model because of its extractive nature and its singular ability to value increased capital. The CEO of a corporation is charged with the single responsibility of increasing the value of the corporation’s stock. Because ecological and social concerns carry no inherent value in this system, any damage to them is considered to be an external cost, or a cost that is not accountable by the corporation. The hypergrowth model is fueled by a constant global search for cheaper labor sources, cheaper natural resources, fewer restrictions on exploitative activities and new markets. Thus, another limiting factor to a corporation’s market is the influences of local culture. Many of the threats facing the countries of the world today and particularly those in the Islamic world are threats to the local traditions and the local way of life. The specificity of culture translates to diverse preferences from food and clothes to music and architecture. In light of this, it has become important for corporations to push toward a global monoculture—a desire for hundreds of historically unique nations to eat at the same fast food restaurants, wear the same designer clothes, watch the same films and television, and build the same kinds of unsustainable cities.

The homogeneity that this produces means that corporations can translate their production
and marketing almost anywhere in the world to produce “economies of scale” at the cost of the destruction of local culture and knowledge. Included is the destruction of the historic knowledge of living within the limits of the natural environment, developed and practiced over many generations. But while these threats are deeply felt, they are often not so noticeable in every day life because corporate capitalist development often provides short term benefits in the form of increases in income, jobs and material goods which serve as temporarily substitutes for that which has been replaced.

Accordingly, in terms of long term survivability, it appears that the modern city that develops least is also the city that is the least unsustainable. But what about the many pressures for development? The real question is not if development will occur. It is rather how it will occur. The so-called developed countries are fully developed and committed to an unsustainable way of managing their economies, and although they have now become well aware of this situation, their attempts to make a transition to a sustainable operating system fall far short of what it will take to do so. On the other hand, the countries of the developing world, although they have been greatly tempted by the development model being promoted by Europe and the United States and have already taken the first steps on the corporate capitalist path, are not yet fully committed to it and in any case still have a long way to go to fully implement the Western program. Moreover, there is rapidly growing uneasiness and resistance to accepting the idea that following in the path of these unsustainable programs is inevitable. The reasons for this uneasiness are no doubt many.

Corporate capitalism is clearly a threat to local traditions, local cultures and local economies as well as to the environment at every scale – local to global. Islamic cultures struggle with the question of how to maintain and advance their values in a modernizing world that promises increasing material well being. It seems that increasing wealth and material comfort should also make it more affordable to pursue their preferred values and way of life, but this is clearly not the case. Western style wealth is not culturally neutral.

Is this a problem only for the developing world or are the wealthier countries in a similar situation? Lord Bertrand Russell once said, “If they should raise the temperature of my bath water one degree every half hour, I shouldn’t know when to scream.” In Europe and the U.S. the transition to a system of corporate capitalism has occurred over many decades. As our level of material prosperity has slowly increased, we have only gradually lost our grounding in the non-material things that make life worth living. In contrast, in developing countries, change has happened extremely rapidly. Peoples and cultures have lost a major part of their traditions and cultures within the space of a single generation. This condition gives rise to the terrible conflict where individuals, while being fully desirous of the material benefits that corporate globalization may bring, at the same time are thoroughly horrified with the fact that this new model is completely unable to contain or support any values or system of values other than its own proliferation.

Although we live in a modern world where growth and development is almost universally considered as an unalloyed good, the warning
signs have been with us for a long time. In the United Nation Development Program’s 1996 Human Development Report, five types of harmful growth were identified (UNDP, 1996). They included:

- **Jobless Growth** – where the overall economy grows, but does not expand the opportunities for employment.
- **Ruthless Growth** – where the fruits of economic growth mostly benefit the rich.
- **Voiceless Growth** – where growth in the economy has not been accompanied by an extension of democracy or empowerment.
- **Rootless Growth** – where growth causes people’s cultural identity to wither.
- **Futureless Growth** – where the present generation squanders resources needed by future generations.

All of these syndromes are painfully familiar to not only people in developing countries, but as global capitalism secures its hegemony, these phenomena are becoming increasing prevalent even in the most developed countries. There is good reason to suspect that these forms of harmful growth that are a direct function of the Globalization project, are one of the root causes of oppositional and terroristic movements that have become a major threat in both the Islamic world as well as in the West. Margaret Thatcher famously proclaimed in her familiar acronym, “TINA” - “There Is No Alternative.” i.e. there is no alternative to global capitalism. The major question of this paper and indeed of the HAMMAM project is: “Is there an alternative, and if so where do we look to find it? Can we find not just weaknesses, but strengths and even alternatives by addressing the future of the Islamic city through the window of the hammām, its traditional neighborhood, the medina within which it is located and in the Islamic culture in which it is situated?”

### Lack of Suitable Sustainability Models in the West

Having been so thoroughly shaped for so long by the forces of global capitalism, the European or Western city remains largely silent on the question of sustainability. Yes, particularly in Europe, many improvements have been made to the city. We may call them Sustainability Oriented improvements, but they fall quantitatively far short, but more importantly structurally inappropriate for what would be required if those cities were to actually operate on a sustainable basis. To give some idea of the magnitude of the problem, the Global Footprint Network has done pioneering work in determining the magnitude of the effects of our way of life on the earth and its resources. Its Ecological Footprint method is a determination of the land area (footprint) or what they call “appropriated environmental space” that would be required to support the material lives (food, fuel, materials) of a particular country on a continuing basis. When they do the calculations for the whole planet, it is no surprise that the amount of land available for the 6.3 billion people (in 2003) on the planet is greatly exceeded by the amount of biologically productive land that their lifestyles require to support it on a continuing basis (Global Footprint Network, 2006). This means that in conducting our current way of life we of necessity are drawing down the “natural capital” of the environment and loading the environment with harmful substances. We are living unsustainably.
on borrowed time. The Network has done calculations for the footprints of many countries on a per capita basis. Interestingly, most of the South Mediterranean countries in our HAMMAM project fall within a narrow range of 0.9 hectares per capita to 2.1 hectares per capita. This range is below what the Network calculates is the unsustainable global average of 2.2 hectares per capita. Following is a list of a few of their per capita footprint by country calculations:

<table>
<thead>
<tr>
<th>Country</th>
<th>hectares per capita</th>
</tr>
</thead>
<tbody>
<tr>
<td>India</td>
<td>0.8</td>
</tr>
<tr>
<td>Morocco</td>
<td>0.9</td>
</tr>
<tr>
<td>China</td>
<td>1.3</td>
</tr>
<tr>
<td>Egypt</td>
<td>1.4</td>
</tr>
<tr>
<td>Algeria</td>
<td>1.6</td>
</tr>
<tr>
<td>Syria</td>
<td>1.7</td>
</tr>
<tr>
<td>Turkey</td>
<td>2.1</td>
</tr>
<tr>
<td>World</td>
<td>2.2</td>
</tr>
<tr>
<td>Austria</td>
<td>4.9</td>
</tr>
<tr>
<td>France</td>
<td>5.6</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>5.6</td>
</tr>
<tr>
<td>Canada</td>
<td>7.6</td>
</tr>
<tr>
<td>United States of America</td>
<td>9.6</td>
</tr>
</tbody>
</table>

Table 1: Footprints of selected countries on a per capita basis.

Austrian lifestyle places more than four times the load on the environment as does an Egyptian’s and an American’s lifestyle causes six times the environmental load as an Algerian’s.

There are different ways to react to this data. The most obvious is to note that the results seem unsurprising: It appears in this listing that the poorer countries require the fewest land based resources to support the lifestyle of the average citizen while the wealthier countries require many times the land area to supply the average citizen with his/her material needs as well as to balance out the harmful byproducts of their consumptive lifestyles. However, more careful consideration would suggest that the people in the U.S in many significant respects are not nearly as well off as people in a number of European countries. Moreover they are not even the most comfortable and certainly not the happiest. Conventional development models stress economic growth as the ultimate objective and measure, often expressed as GDP or Gross Domestic Product. GDP closely tracks the above table with the highest GDP’s tending to be the most unsustainable while the lowest GDP’s in a material and environmental sense tend to be the least unsustainable.

There is an interesting concept developed by the king of the small, undeveloped country of Bhutan in 1972 called “Gross National Happiness” (Bakshi, 2005). The concept of GNH is based on the premise that true development of human society takes place when material and spiritual development occur side by side to complement and reinforce each other. The four pillars of GNH are the promotion of equitable and sustainable socio-economic development, preservation and promotion of cultural values,
conservation of the natural environment, and establishment of good governance. Another alternative to GDP developed by Clifford Cobb is the Genuine Progress Indicator or GPI. GPI is equal to personal/household consumption expenditures, plus the value of household work not counted in GDP, plus the value of volunteer contribution work; minus the crime factor, the environmental degradation factor, the family breakdown factor, the overextended worker stress factor, exploding consumer debt, and inequality of distribution of wealth and income (Cobb, et al., 1995). The GPI avoids many of the obvious shortcomings of GDP but is neither an indicator nor a guide to the realization of sustainability. It is however evidence that increasingly we understand that placing a massive load on the environment cannot be considered a badge of honor although perversely, according to current economic thinking its conjoined twin, high GDP, is almost always considered a positive indicator. While it is not presently a crime to live in a way that prevents our descendants from enjoying comparable lifestyles - as individuals we hardly seem to have much choice – such crimes against the future on a massive scale are certainly among the most harmful and most threatening offences being perpetrated today.

In the developed countries the choices appear to be limited to lowering the rate of unsustainable forces and activities - that is, lowering the rate at which things are getting worse. When a system that has been working relatively well for a long period of time slowly drifts into the clearly unsustainable realm, it is extremely difficult to “undevelop” it, much less to completely change its operating system as well as the components it operates. It would be difficult to imagine any acceptable political approach that could accomplish this. However, in the developing world the situation is completely different.

In a country that has been operating within or near its fair share of earth’s resources, although perhaps at too low a level of material comfort, there is far more room to develop. Its choice is either to mimic the unsustainable development path of the wealthier countries, or to forge a rather different path, uniquely crafted to respond to local circumstances, traditions, values, resources, and guided by the principles of sustainability. That is to say, by establishing a process that guides development by making sure that development and its effects on the environment, its appropriated environmental space, or ecological footprint, remains within what the Footprint Network used to call its “fair earth share” or what we have called its Sustainable Area Budget (SAB) (Levine, et al., 2000). The SAB concept is simple in principle. It posits that each person is entitled to be sustained by his or her fair share of the earth’s bounty—land, water and air—on a renewable, regenerative basis. This means that each one of us is entitled to the usage of one 6.6 billionth of the Earth’s renewable resources as long as we do not degrade them in the process. As there is yet no account of such a principle in international jurisprudence or treaty, for the present it will be more conservative to apply the principle on a country or a regional basis. The SAB for a town then, is in the same proportion of the country’s total land area as the proportion of the town’s population is to the country’s total population. Working from the same data as that used by the Global Footprint Network we would aggregate the SAB’s of the inhabitants of a city-region to obtain the SAB land budget of the region. This
is the land based budget within which on a net basis all the material and energy needs of the city-region are to be satisfied. What was once a problem so vast that it could not conceivably be solved - balancing the activities of 6.6 billion people over the whole globe to operate within the carrying capacity of the Earth’s natural environment - the SAB method defines a problem that can be meaningfully resolved by balancing the activities of a community of people within nature’s capacities within a defined geographic area, the Sustainable Area Budget of a city-region.

The Hammām as Generator of Sustainable Civil Society Processes in the Medina and the Medina as the Model for Sustainability in Developing Countries

In the HAMMAM project we have worked from a strong traditional base. Starting with existing buildings and an institution, both in need of rejuvenation, we seek to see where we can go and how far we can go in reviving them and without violating their essential character, bringing them up to date and speculating how such a revival might become generative beyond the immediate focus. Could we go from the building to the public space and the neighborhood, the district and the city? Could we go from the social movement that champions the revival of the hammām practice to the revival of civil society practices in the neighborhood to those of the city at large? Could we do all this within the context of sustainability principles so that increasing civil society wealth as well as material wealth can be self-generating in ways that do not export problems beyond the local context or into the future? Our researches suggested that indeed all these things could be possible, both in the context of the Islamic medina and, by example, in the historic centers to be found in other developing countries as well.

Conclusion

There exists today in the great cities of the Islamic world, an opportunity that is not available in the developed countries. The first part of this opportunity is that there is the “space” to develop. There is a space of possibilities (Levine et al., 2003) that the developed world does not have. Development will happen to fill this space – it is just a question of what kind of development. The second is that because of the background of a strong moral tradition rooted in Islam, progress and change based upon so-called “market forces” are not automatically accepted, but are assessed critically and sometimes resisted – for better or worse – in relation to how they support traditional norms. Thirdly, there seems to be a desire to find a path that is different from that of the wealthier countries – a path that is grounded in values rather than in the path guided by solely global economic pressures. These characteristics make it possible for development in these societies to create programs of urban sustainability in ways that would not be possible in either Europe or the US. The HAMMAM project presents the first small hints of how such a process might begin, through the renovation and recasting of both the physical as well as institutional aspects of the hammām to become a generator of sustainable civil society processes in the medina.
References


------------------------------------

Richard S. Levine
From early in his architectural career, Prof. Richard S. Levine has been a pioneer and advocate for sustainability-oriented architecture in the United States. He has over 200 publications on solar energy and sustainability research and projects. He has conducted sustainable city research and projects in Italy, Austria, China, the Middle East as well as in Kentucky. In the mid 1980’s, Prof. Levine, along with his colleague Ernest J. Yanarella, started the Center for Sustainable Cities (CSC) at the University of Kentucky, to study and advance the theory of sustainability. Partnering with Dr. Heidi Dumreicher, director of Oikodrom: the Vienna Institute for Urban Sustainability, the CSC pinpointed the scale of the city or city-region as the scale at which homeostatic relationships between social, environmental and economic issues could reach a necessary critical mass, a pivotal discovery which lead to the eventual formation of the Operational Definition of Sustainability. In the early 1990’s, the CSC and Oikodrom partnered up again to work on a series of three commissioned design studies for a neighborhood-as-a-hill to be built over the Westbahnhof rail-yard using a coupled-pan space-frame system patented by Prof. Levine. The City-as-a-Hill urban form, the Sustainable Urban Implantation, the Partnerland Principle, the Sustainable Area Budget, the Operation Definition of Sustainability, and many other sustainable urban design principles were bolstered by the Westbahnhof project and continue to be studied and expanded upon today. From 2002-2005, Prof. Levine was the sole American researcher in the European Commission sponsored SUCCESS project which studied rural villages in six Chinese provinces from a sustainability perspective. In 2005, the CSC Design Studio (CSCDS) was formed as an extension of the CSC and Prof. Levine’s private architectural practice. In 2007, the CSCDS, headed by Prof. Levine, organized a system-dynamics modeling seminar in Fez, Morocco, as one of the concluding meetings for the recently completed European Commission sponsored HAMMAM project (2005-2007) that studied traditional Islamic bath houses in five Mediterranean countries.

------------------------------------

Michael T. Hughes
Michael T. Hughes joined the Center for Sustainable Cities (CSC) as an undergraduate student in architecture under the tutelage of Prof. Richard S. Levine in 2003, and was later brought in as a design and research associate at the CSC Design Studio (CSCDS). For his master’s thesis, in conjunction with
the CSCDS, Mr. Hughes’ coordinated a series of sustainability-oriented urban design scenarios for the city of Martin, Kentucky, which earned him his M. ARCH degree in 2005. Mr. Hughes’ undergraduate thesis for a City-as-a-Hill, entitled “Sustainable Reclamation: An Urban Model for Coal Country,” was designed to be built over an un-reclaimed coal strip-mining site in Whitesburg, Kentucky. His study was later picked up by the CSCDS and received accolades as a finalist in the RIBA-USA International Design Competition, Building A Sustainable World: Life in the Balance in 2007. Mr. Hughes was one of the head designers for the “Sustainable-Public Administration Town-as-a-Hill” which was entered into an international urban design competition for a new administrative city in South Korea. With the CSCDS, Mr. Hughes has co-authored over sixteen published papers and articles, aided in the system-dynamics modeling for the European Commission sponsored SUCCESS and HAMMAM projects, and presented his research in the US and Turkey.

Casey Ryan Mather
Casey Ryan Mather joined the Center for Sustainable Cities (CSC) as an undergraduate student in architecture under the tutelage of Prof. Richard S. Levine in 2003, and was later brought in as a design and research associate at the CSC Design Studio (CSCDS). For his undergraduate thesis, in conjunction with the CSCDS, Mr. Mather co-designed several sustainability-oriented urban design scenarios for the relocation of downtown Martin, Kentucky. For his master’s thesis, also in conjunction with the CSCDS, Mr. Mather was one of the head designers for the “Sustainable-Public Administration Town-as-a-Hill.” This project was entered into an international urban design competition for a new administrative city in South Korea, and earned him his M. ARCH degree in 2007. Mr. Mather later joined in further elaborating upon the City-as-a-Hill study, entitled “Sustainable Reclamation: An Urban Model for Coal Country,” designed to be built over an un-reclaimed coal strip-mining site in Whitesburg, Kentucky. This project received accolades as a finalist in the RIBA-USA International Design Competition, Building a Sustainable World: Life in the Balance in 2007. With his associates in the CSCDS, Mr. Mather has co-authored over sixteen published papers and articles, aided in the system-dynamics modeling for the European Commission sponsored SUCCESS and HAMMAM projects, and presented his research in the US and China.
CREATIVITY-FUNCTION NEXUS; CREATIVITY AND FUNCTIONAL ATTENTIVENESS IN DESIGN STUDIO TEACHING

Amira Elnokaly, Ahmed B. Elseragy, and Sarah Alsaadani

Abstract
Can creative forms enclose functionally-efficient spaces? Do functional considerations restrict creative design products?
The question of creative form versus function is one that is very debatable, and has been in question for a long time in both architectural education and practice. Milestone figures of architecture all have their different views on what comes first, form or functional spaces. They also vary in their definitions of creativity. Apparently, creativity is very strongly related to ideas and how they can be generated. It is also correlated with the process of thinking and developing. Creative products, whether architectural or otherwise, and whether tangible or intangible, are originated from ‘good ideas.’ On one hand, not any idea, or any good idea, can be considered creative but, on the other hand, any creative result can be traced back to a good idea that initiated it in the beginning (Goldschmit and Tatsa, 2005).

However, how can a good idea be classified, which ideas are useful and helpful, and how can they be characterized, are main questions that this research work aims to answer. This paper attempts to discuss and compare various, and often opposing, viewpoints of both students and teaching staff, at the possibility of striking a balance between exciting forms and functional precision in the design studio. The research examines the conflict that students often face when assigned with a design project, and the difficulties they experience in translating theoretical and fundamentally-important data into a novel architectural interpretation. Furthermore, the investigation aims at relating the continuous, non-linear process of review and modification, customary to traditional design-studio approaches, to the final products students submit as part of their design-studio applications. The final issue in question is the role of criticism and assessment in the forms of juries or crits, assessment criteria, and whether this traditional aspect of design-studio education truly provides architectural students with the constructive criticism they need amid feelings of tension and limited time constraints. The Architectural Engineering and Environmental Design department at the Arab Academy for Science and Technology (AAST) is exploit as a case study for the research work presented in this paper.

Keywords:
Creativity, functional-efficiency, constructive criticism.

Introduction
The dispute of “form versus function” has been argued for a very long time. The relationship between creativity and functional perfection
is one that causes many debates between architectural students and tutors on one hand, and between professional designers on the other. Many prominent architects have reached fame through their vision of what form and function should be in relation to each other. Frank Lloyd Wright, the creator of organic architecture, for example, believed that “form and function are one,” while Louis Sullivan worked with the concept that “form follows function” (Tietz, 1999). Another master of architecture, Adolf Loos, believed that “Ornament is Criminal,” (Tietz, 1999) implying that form should be completely ignored, and that the architect should focus on functional perfection in order to create a good design.

Creativity in literature, music and other forms of art is immeasurable and unbounded by constraints of physical reality. Musicians, painters and sculptors do not create within tight restrictions. They create what becomes their own mind’s intellectual property, and viewers or listeners are free to interpret these creations from whichever angle they choose. However, this is not the case with architects, whose creations are always bound with some physical constraint. Potential restrictions may be related to the building location, social and cultural values related to the context, environmental performance and energy efficiency, and many more. While traditional teaching practices had a role in the scrutiny of oversimplifying Architecture as an art based profession (Salama, 2008), current discourses have heavily emphasized other critical views of it as knowledge based or research based pedagogy (Fischer, 2004, Salama, 2008).

However, architects are said to be the “synthesizers” of ideas, almost by definition (Goldschmit and Tatsa, 2005). They must be trained from a very early stage in their architectural careers to generate innovative ideas, and simultaneously design functional indoor and outdoor spaces, in harmony with human needs. They are the ones responsible for the creation of the building as a product, and the more diverse and wide-ranging the design ideas are, the better the product is likely to be. It is common practice to find that students are taught architectural design in what is described as the ‘studio-approach.’ They are encouraged to explore various ideas and compete at originality, while making substantial decisions to tackle hypotheses and functional requirements. The assembly of the design product often takes place through a non-linear evolutionary process divided into various phases. In architectural schools, this is referred to as ‘the design process’.

**The Creative Process in the Design Studio**

The design studio as known today is similar to the first studio used for architectural education,
at the Ecole des Beaux-Arts in 19th Century Paris (Chafee, 1997). One-to-one studio interaction is the traditional basis of architectural education, established at this infamous institution, which determined the final culmination of students’ projects in the form of a public presentation. This trend in architectural education has been studied in depth by various scholars. Schon (1985) for instance depicted studio communication between tutor and student as an extensive yet rather informal cooperation that is an essential factor participating in the student’s ability and progression to create a successful design (Schon, 1985). Salama (1995) dispute that despite the differences in architectural Education all over the world the design Studio remains the forum of creative exploration, interaction, assimilation and the furnace where future architects are molded.

The design studio plays an imperative role in introducing novice architects to architectural disciplines and the profession of solving design problems. Moreover, the studio is a replica of conditions found in professional architectural practices, although constraints of practical reality are considerably minimized (Robinson, 2007). In conventional teaching practices, we often find that design studio education follows an approach that is primarily product-based. Emphasis is primarily placed on the exploration of functional solutions and thus consequential manipulation of form. Students receive constructive criticism from their design tutors, in an attempt to translate these rudimentary and rather tacit proposals into successful designs and optimum solutions. Unfortunately, all but a talented few are able to translate this evaluation into a satisfactory product. Many students are inflexible in adapting their ideas to suit the criticism they have received. It has been observed by many academics that numerous learners search for an ingenious idea at the last minute, under the impression that this will miraculously transform their poorly-design spaces and unsolved circulatory movements into the A-grade solution that they yearn for (Salama, 2005). Most often than not, the results are exasperatingly disappointing.

It is often noticeable that students and staff members in the architectural institution operate on two different ‘sides.’ Students sense disapproval at criticism and are unyielding and stubborn in their response. Many feel that the design strategies adopted in traditional teaching practices are stifling. Overwhelming functional requirements and constant evaluation give them little chance to fly away with their ideas. On the other hand, the experienced eyes of professors have the skill to judge student capabilities, and can see that few students will be able to envelope functionally-efficient spaces with ingenious forms.

Table 1 represents the unspoken division between creative aspects of the design process adopted in traditional design-studio approaches, and limitations that functional efficiency place on potentially innovative designs.

**Research Methodology, Tools and Techniques**

The research work displayed in this paper was originally carried out as a part of the Advanced Architectural Design module (AAD) requirements. This is one of the RIBA part 2 core modules at the Architectural Engineering and Environmental Design Department at the Arab
Academy for Science and Technology (AAST), in Alexandria, Egypt. The school had to undergo changes in the curriculum in order to satisfy the RIBA part 2 requirements. These changes mainly involve an increase in the contact hours in design studio teaching. Thus a change of the credit hours of the design courses from 3 credits each course to 4 credits took place in 2006 (Elseragy, A. and Elnokay, A. 2007). This has made a tutor-student contact hours of a minimum of 8 hours per week. As a result of these changes this Advanced Design course was introduced. The module focuses on how mature architectural students should be committed with the rationales of the design process, approach and proposal. Table 2 depicts the AAST structure in comparison to the RIBA’s parts 1 and 2 structure.

**Table 1: Creative Connotations versus Functional Limitations (Source: Authors).**

<table>
<thead>
<tr>
<th>Creative Connotations</th>
<th>Functional Limitations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Architectural Conception</td>
<td>Architectural theory</td>
</tr>
<tr>
<td></td>
<td>Practicality</td>
</tr>
<tr>
<td>Symbolism</td>
<td>Functional-efficiency</td>
</tr>
<tr>
<td>Inspirational thoughts and ideas</td>
<td>Constraints of reality</td>
</tr>
<tr>
<td>Abstract design sketches</td>
<td>Environmental constraints</td>
</tr>
<tr>
<td>Originality</td>
<td>Energy-efficiency</td>
</tr>
</tbody>
</table>

**Table 2: Comparison between AAST & RIBA course structure. Student groups on which the student survey was conducted are highlighted. (Source: Authors).**

<table>
<thead>
<tr>
<th>AAST M.Sc. Arch.  (Min. 7 Years - 216 CR)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>AAST B.Sc. Arch.  (Min. 5 Years-180 CR)</td>
<td></td>
</tr>
<tr>
<td>RIBA PART 2  (Min. 7 Years-204 CR)</td>
<td></td>
</tr>
<tr>
<td>RIBA PART 1  (Min. 4 Years-144 CR)</td>
<td></td>
</tr>
<tr>
<td><strong>AAST Course Structure</strong></td>
<td></td>
</tr>
<tr>
<td>Semester 1</td>
<td>Semester 3</td>
</tr>
<tr>
<td>Semester 2</td>
<td>Semester 4</td>
</tr>
<tr>
<td><strong>RIBA Course Structure</strong></td>
<td></td>
</tr>
<tr>
<td>Year 1</td>
<td>Year 2</td>
</tr>
</tbody>
</table>
Students are encouraged to explore the design process as well as design process related aspects (i.e. data collection, site analysis, user definition, functional requirements, architectural programming, environmental aspects, energy efficiency and most of all the development of ideas.) These issues are investigated according to varied themes that they may work with throughout the course of their architectural career. At a later stage of the course, they begin to apply the results of their investigations to a conceptual design project. Two separate sets of questionnaires were designed and sent out to the AAST Architectural Engineering and Environmental Design staff members and students. While the survey was conducted on all staff involved in the design studio, only mature students were asked to fill out the questionnaires aimed at the student-group. These ‘mature’ students concerned are those who have reached advanced levels of their architectural education, i.e. students of Architectural Design 4 (fourth year) and above. See attached table of AAST curriculum, inserted below. Increased architectural maturity generally implies that students have become familiar with architectural vocabularies, and have encountered the possibility of applying theories, structural analysis, environmental controls and other aspects ultimately taught through class instruction to their design-studio proposals.

On the other hand, it is hardly perceivable that students at more junior levels of their architectural education will have developed a suitable degree of awareness that would allow them to translate a bland design brief into intriguing and diverse architectural proposals. However, it is important to note that both surveys dealt with the same issues, debating the exploration of functional solution versus the realization of novel architectural forms.

**Students-Group Survey**

Concerning the students-group sample questioned for this research, the survey was conducted on students of architectural design modules four, five and six as well as those preparing their final architectural design graduation projects. The survey was conducted mainly in the form of a questionnaire, comprising eleven questions that enabled students both to voice their experience of previous design studios, while simultaneously providing the researchers with insight into student learning and thinking styles. Eleven short and concise questions were posed throughout the questionnaire, and students were asked to provide responses within a ten to fifteen minute time span, during the design studio. This precautionary procedure was taken to ensure that all form-recipients gave direct, on the spot and voluntary responses, as opposed to a lethargic delay, or even complete disregard and lack of interest, which may have been the case if students were given a larger time span to fill out their questionnaires.

Aspects explored throughout the student-group survey can be categorized into three main areas. As the research primarily explores creative design as part of the design process, one of the first notions investigated was that of human creativity, the use and meaning of visual imagination and its role, accumulation and pursuit in architectural design. This area was consequently followed by what often seems to be a never-ending argument; the debate of 'data-collection versus form-finding.' Therefore, this area explores the artistic, conceptual and innovative side of architectural form-making,
as well as parallel connotations of context, composition and functional underpinnings. Finally, the students were asked to voice their opinions concerning evaluation assessment, which are often envisioned as disputable issues, core to any novice architect’s education. Interim reviews take place throughout the design studio on a personal level through criticism on the part of the instructor on a twice-a-week basis. Architectural Design Studio modules at AAST, on all levels, are taught two days a week, with each studio spanning over a four-hour time period. Depending on student numbers, a variable group of up to six instructors monitor the course simultaneously, at a maximum ratio of fifteen students to one instructor, providing lengthy discussion and constructive criticism.

**Tutors-Group Survey**
All members of staff at the AAST’s Architectural Engineering and Environmental Design Department were asked to complete the questionnaire assigned for design-studio tutors. This is inclusive of instructors at all levels, including professors, teaching assistants and part-time professional architects. Similarly to the student-group survey, issues raised in the tutor-group questionnaire tackled all of the above issues, although the viewpoint was alternatively pedagogic. Once again, features of creativity and inspiration in the context of the design process were examined. Recognition, motivation, encouragement and methods of enhancing creative designs were issues that were heavily touched upon. The perceived and sometimes undermined conflict, often faced by students, between reality and creativity, and limitations that functional perfection undoubtedly force on their ability to ‘fly away with their ideas’ was also questioned. The possibility of reaching a pluralistic equilibrium was therefore implied throughout. Finally, the role of assessment and its reflections on architectural design education, from tutors’ opinions, were heavily questioned.

**Discussion of the Surveys**
The following sections portray and analyze various viewpoints in the three main subject areas focused on in both the student-group and tutor-group surveys:

1. Human creativity and how it is reflected in the design studio.
2. The question of data-collection and how it is related to form-finding.
3. The question of assessment, and its role in design-studio education.

**Human Creativity and its Pursuit in the Design Studio**
The ability to think in a creative manner is firmly associated with one’s capacity to critically envision reality, while experimenting with adventurous solutions to arduous and conventional tasks (Csikszentmihalyi, 1997).

Heap (1989) determined creativity as the ability to restructure old ideas into new creations (Heap, 1989). Interaction between staff and students as part of the design studio application helps stimulate creativity in design activities. In addition, this interaction improves students’ analytical skills, as well as their perception of design problems from various viewpoints (Casakin, 2007). Throughout the course of this research, it was quite surprising to realize that the majority of students at the AAST’s Architectural Engineering and Environmental Design Department seem rather uncertain of
their creative abilities, despite the connotations of the word ‘architecture’ with ‘cognitive design’ and ‘creativity,’ which are arguably considered synonymous.

Only 35% of fourth and fifth year architecture students believed that they have creative abilities, while the majority (43%) responded that they are ‘somewhat creative.’

Contrastingly, this sense of doubt was not reflected in the hobbies and pastimes they mentioned. Almost all students questioned choose to amuse themselves through artistic activities, such as drawing, painting, writing and sculpting on a traditional level, as well as experimenting with computer graphics and photography. When asked to provide their personal opinion on what creativity entails, responses were varied. However, a large group directly linked it to the work done in the design studio, saying that it means ‘the ability to use and show imagination’ in their designs. Alternatively, a similar-sized group mentioned that creativity is all about ‘being different,’ in all areas and not just the design studio.

Architectural design instructors at the department largely trace high levels of creativity to natural talent, implying that creative thinking, and the cognitive processes linked to it, are difficult and therefore require patience to train, enhance and improve. This is where the architectural design tutor plays an imperative role. The task of an architectural design studio tutor is different from that of any other educator. Design tutors are required to deeply understand their students’ personalities and abilities, if they are to help develop students’ abilities and cognitive processes.

On the other hand, researchers into creative thinking and related subjects have suggested that there are methods to sustain and improve one’s creative performance. One of these ways is to provide a suitable and motivating environment, which helps develop their expertise in handling and reaching innovative solutions (Morrow et al., 2004; Weisberg, 1993).

Only 26% of design tutors seemed to agree with this viewpoint, saying that developing students’ creative skills was largely the responsibility of those teaching them, as a creative output, in their opinion, depends on teaching methods pursued. A further 12% also believed that primary and secondary school education play a sizeable role in molding an individual’s creative output, arguing that schoolchildren’s minds have had minimal exposure to real-life situations and are
therefore easy to adapt very early on.

**Data-Collection versus Form-Finding**

Reality and creativity in the design studio are often perceived as two conflicting issues, never to be united in the single efficient of creating a ‘good’ design (Morrow et al., 2004). Thus continues this conflict between data-collection and the search for an innovative architectural form. This notion clearly exists between architecture students at the AAST’s Architectural Engineering Department. 67% of students who have technically completed four semesters of design studio work find trouble advancing with their proposals prior to the data-collection stage. Feeling that numbers, areas, and functional and contextual requirements frustratingly stifle imaginative creations, they often decide to brush collected data aside and venture with either sketching incongruous forms, or testing various three-dimensional ideas on 3D modeling software. All tutors have noticed this thinking pattern among students, and agreed that, in one way or another, students do face a great deal of difficulty transferring their ideas to a coherent manner after having compiled all data needed and conducted research. Most tutors related this difficulty to individuals’ creativity, suggesting that the more creative the student, the easier it would be for him or her to reach an optimum solution that solves problems of both function and form. Conversely, very few tutors attributed this difficulty to teaching methods, the design studio environment or even each individual student’s effort at this crucial stage.

Having found that modeling techniques help bring students’ dreams back down to earth, many instructors demand students construct either physical three-dimensional study models of their preliminary creations, or alternative virtual computer models. In several cases, some tutors have even asked their students to create their models in a whip of spontaneity and as a first step, before going back and analyzing the creation, and finding ways of linking it to reality. This step of the design process is pursued both in education and practice. While many professional architects rely on paper and cardboard as conventional model-making tools, many merge traditional devices with digital ones in an attempt to accurately resolve complicated geometries (Hadjri, 2003; Szalapaj, 1999 and Chang, 1999). In addition, many design tutors encourage their students to create a general outline of the building’s exterior form, before commencing with solving internal functional aspects related to areas, circulation and functional relationships between spaces. Of these tutors, several argued that the issue of what comes first: function or form? depends largely on the project at hand. While some building designs dictate that the exterior is based purely on functional aspects, for example, in hospitals, airports, etc., many other buildings types are more flexible in their requirements and can therefore accommodate strong and striking forms.

Many students, tutors and even professional architects believe that the key to generating a creative design that simultaneously bridges the gap between function and form lies in the architectural concept (Shih, 2004). Originally derived from the Latin word “concipere”, meaning to conceive, this origin symbolizes that conception as an evolutionary process, which continues to grow and develop (Haddad, 2006). Architectural concepts are therefore
meant to help draw inspiration and generate a multitude of possibilities in various directions and according to a multitude of ideologies. Students who took the survey, however, disagreed on how architectural concepts assist them in expressing their ideas and solving problems. 34% of them felt that the concept should only be used as a form-finding idea, as opposed to 16% who immediately related it to the functional problem-solving aspect of architectural design. A minor 10% related the architectural concept to a well-known ideology, theme or trend that has previously been established either by famous architects or through contextual probation. Only the remaining 40% agreed with most of their tutors, in considering the architectural concept a design aspect that brings beauty, functional perfection and sometimes well-known ideologies into a single building.

Criticism and Assessment
Assessment in the design studio, particularly in the form of juries or crits as they are sometimes known, is an aspect of studio culture that has changed little throughout the years, and has woven itself into the intricacies of studio culture. Assessment in the form of the jury is seen by educators as an essential part of architectural education (Lizor 2006; Clelford and Hopkins 2006).

Almost all staff members at the AAST’s Architectural Engineering and Environmental Design Department agreed with this viewpoint, stating that the assessment process plays a key role in shaping students’ architectural background.

Despite their importance, however, reviews and juries are often viewed as a frustrating experience rather than a beneficial one, particularly on the part of students, who often sense the existence of a communication gap between them and those called in to assess their work. Students often find it difficult understanding the exact assessment criteria on which their grades are set. This obstacle may be overcome using feedback forms, on which students may propose assessment criteria, thus increasing their understanding of how the final grading is determined, which is not carried out in all crits undergone at the AAST Architecture School.

Cultural aspects further add to this frustration, particularly in the Egyptian cultural context. The educational system in Egypt is generally based on a one-way teaching method, which gives little leeway for communication, brainstorming or debate. As a result, the education system does little to enhance students’ skills. This cultural aspect makes it difficult for students to understand the importance of assessment through juries and, instead of benefiting from the experience; they envision it as one to fear. Time constraints further add to this lack of communication, especially when tutors fail to stick to the time-slot schedule assigned to each student before the start of the jury. As a result, a large proportion of students are not given a fair chance of displaying their work, discussing it and receiving the criticism they should. In many cases, and as the day begins to progress, tutors are left with little choice but to prompt the student with one or two fleeting questions, before deciding the final grade, thus massively reducing the student’s potential gain from the whole experience.

Over 50% of Architectural Design 4 students and
above reached the general conclusion that tutors do not analyze architectural projects with enough scrutiny. Many believe that assessors are thoroughly impressed by aesthetics, bright colors, extravagant forms and high-quality rendering, and therefore turn a blind eye or sometimes fail to notice functional detailing. On the other hand, the majority of tutors stated that they place about 10% of the final grade on rendering and presentation, dividing the remaining 90% of marks on functional perfection and interesting form.

It may be important to note, however, that many members of staff disagree on weighting of functional perfection and form. Some tutors prefer to assign up to 60-70% of the final grade on functional solutions, while others place between 40-60% of the mark on the creation of an interesting form and novel idea. It is without a doubt that these differences in opinion and lack of establishment of assessment criteria further add to students’ confusion, leaving them unsure on how to start their progress and what aspects to focus on in the limited time period available for the design of an entire building. The best way to get around this problem is to hand on to students with the brief of each project what the aspects of assessment on that specific project shall be and roughly on what basis they would be assessed.

**Conclusion**

Creative design is an aspect that is imperative for the development and advancement of any novice architect’s education. It is arguable that undergraduate architects are most able to experiment with their ideas at university level, as architectural practice and profession introduces increasing constraints and limitations. While it is essential that novice architects enhance their creativity, architectural education should help them strike a balance between their aspirations and the comfort of users who would potentially use the buildings designed. It is difficult to determine which aspect comes first, whether creativity or functional perfection. For this reason, tutors must strive and stress the importance of both these aspects in the design studio. Additionally, it is up to design tutors to bridge the gap in opinions between their students and themselves, thus allowing students a better architectural understanding. This is particularly important in issues such as assessment criteria, where misconception is often the missing link that transforms the high-beneficial process of assessment into a confusing and frustrating
experience.

Finally, it is imperative, particularly in the case of an architectural department such as that of the AAST, that students' understanding of the grading system is made highly understandable, possibly through well-formulated feedback forms and regular interim crits. These would allow students to propose their own assessment criteria related to assigned projects, and meanwhile reduce feelings of frustration and nervousness they may experience during the final jury.

Acknowledgements
The authors would like to acknowledge the efforts of the Architectural Engineering and environmental Design department at the AAST (Alexandria Campus) staff and students who took part in filling the research questionnaire, and in discussing their views on the topic which is the main concern of this paper. Their involvement and opinions are highly appreciated.

References


---

**Amira El Nokaly**
Amira Elnokaly holds a B.Sc (Cairo) Mphil, Ph.D (Nottingham) in Architecture. She is currently a Senior Lecturer at the Lincoln School of Architecture, The University of Lincoln, UK. Prior joining the Lincoln University she was an Assistant Professor of Architecture at the Architectural Engineering and Environmental Design Dept., at the AAST. She is a licensed architect in Egypt and has a large experience in practice where she was one of the founders of the Environmental Design Research and Consultancy Firm (EDRC), where she worked as an Energy and Environmental Design Consultant (2005-2008). Her research interests are diverse but are related by a consistent concern with embracing a sustainable mindset in architectural education, and ecological and environmental related issues in the Built Environment. She has widely published on the application of CFD on Building Design, Renewable Energy Technology, Sustainable Architecture and Environmental Design of Buildings, and Curriculum Development and Architecture Design Studio Teaching. She can be reached at aelnokaly@lincoln.ac.uk

---

**Ahmed El Seragy**
Ahmed Elseragy holds B.Sc, M.Sc (Alexandria) and Ph.D (Nottingham) degrees in Architecture. He is an Environmental Design Consultant with 15-years experience, provided environmental design and architectural consulting services for many organizations operating in Asia, Africa, and the Middle East. He is an Associate Professor of Architecture at the Architectural Engineering and Environmental Design Department, Arab Academy for Science and Technology, Alexandria, EGYPT. He was one of few who participated in establishing the new architecture department at the AAST in 1997. Excellency in architecture education, design studio teaching and curriculum development are some of his main concerns. He has disseminated his research work and findings on different levels and he managed
to secure several research awards and grants to carry out his research since 2002. He is the Principal of EDRG & EDCG, Environmental design research group and Environmental design consultancy group, which he set up with his partners and colleagues in 2004.

---------------------------------

Sarah Al Saadani
Sarah Al Saadani holds a B.Sc degree in Architecture and is a Teaching Assistant at the Architectural Engineering and Environmental Design Department, Arab Academy for Science and Technology, Alexandria, Egypt. She is also a postgraduate research student at the same department, a RIBA Part 1 and 2 validated school in Alexandria, Egypt. She has recently completed the requirements that exempt her from RIBA examination part 2. Her main research interests evolve around ecological and sustainable design, and she is largely concerned with the application of ecological design in the architectural design studio.
INTUITION IN INTERIOR DESIGN

Irina Solovyova

Abstract
Intuition enables individuals to develop an understanding of the structure of complex systems. In interior design many decisions are reached intuitively even though the process of formulating solutions may be argued rationally. Intuition is intrinsically intertwined with our collateral experiences, memories, and implicit thought. Design intuition draws on our entire experience, not only on what we consciously isolate as relevant information. In education we prohibit students from relying on their intuition and require solutions based on pure reason. The author of this paper argues for bringing intuitive decision making back into interior design as a legitimate design tactic.

Keywords:
Intuition; interior design; pedagogy.

Introduction
Intuition in academia has always been a controversial topic. Mark Brietenberg (http://www.icsid.org/education/education/articles183.htm?query_page=1) provides a good overview of the state of intuition in design education. Some people consider intuition the only way to create unique design, others, like Brietenberg himself, are rather sceptical about usefulness of intuition. It is absolutely true that intuitive design can be bad. It is also true that all intuitive decisions are always subsequently tested analytically for set criteria. The author believes that intuition in interior design education is a good friend, not a frightening mystical creature. This paper attempts to extract intuition out of paranormal and look at it rationally to illustrate intuition to both sceptics and intuition devotees as a useful design tactic.

"Intuition is a difficult concept to define but one that most people recognize as an important factor in thought and judgment" (Officer, 2005:1). We tend to ignore intuition because it is "one of many unobservable mental entities scientists are ... unable to test" (ibid:1). Intuition
is hard to pinpoint and is usually avoided as a subject in academic discussions. Shunning the subject does not prevent intuition from being an important part of design. Interior design educators need to work together to address and willingly incorporate intuition into education as a tactic of facilitating student learning.

There are several theories and assumptions this paper will use to construct its argument. The following is a selective summary of those theories and assumptions.

1. There has been little research done on intuition, specifically in the field of interior design. This paper will rely on research conducted in anthropology, architecture, the cognitive sciences, and in other disciplines. The underlying premise is that when we talk about intuition as it relates to place, theories from different disciplines describe the same phenomenon. The only difference is one of perspective.

2. Intuition is embodied (Solovyova & Nanda, 2008). Embodiment is defined by Csordas as an “indeterminate methodological field defined by perceptual experience and mode of presence and engagement in the world” (Csordas, 1994:12).

3. Designers have predominantly intuitive personalities (MacKinnon, 1962; Dumling et al, 1996).

4. Even though intuition is a subconsciously automated process that is difficult to study, we know that together with logic it is essential to the learning process (Hogarth, 2001).

5. Interior design shares the studio model of education with architecture and other design disciplines. Many programs also share coursework. When discussing educational aspects, this paper will rely on studies within a broad realm of design disciplines.

**Intuition**

Officer compared intuition to dreaming, because it is a “subjective process familiar to everyone but impossible to represent objectively” (Officer, 2005:7). Myers (2004) describes intuition as things we know we know, but we don’t know how we know them. Most people will agree that intuition can be depicted as ideas or feelings that guide our thoughts and behaviour, and something that is intrinsically intertwined with our collateral experiences, memories, and implicit thought (Solovyova & Nanda, 2008).

**Understanding Intuition**

According to Hogarth (2001), intuition is automatic information-processing that occurs outside our consciousness, working memory and most of the time, our attention. Intuition always depends upon a person’s unique experiences in their life history. Intuition is also closely connected with emotions (Hogarth, 2001; Dane and Pratt, 2006). Intuition is a part of tacit system, and thus not always conscious (Hogarth, 2007). When intuition takes the form of automatic thoughts, it cannot be ignored (Pedigio, 2005). Koriat gives intuition substantial credit for guiding human behaviour: “people are blind followers of their metacognitive judgments and intuitions. They take the validity of their feeling of knowing for granted and generally use that feeling as the basis for their behaviour” (Koriat, 2000:162).

Officer (2005) presents a summary of possible sources of intuition (as follows):
1. Intuitive knowledge may be self explanatory, but inaccessible or unverifiable by external reference.

2. Intuition is thought of as a vehicle connecting creativity to practical results.

3. Intuition is “synonymous with tacit knowledge: the essential but unexpressed knowledge needed to execute intricate tasks or skills” (Officer, 2005:7).

4. Intuition is magic.

In order to immediately see the connection between intuition and interior design, it is helpful to list the skills identified by Hogarth [7] as demonstrated by the intuitively gifted:

1. The capacity for visualization (two- and three-dimensional visualization is a skill inherent to interior designers).

2. The ability to acknowledge emotions and learn from them (even though the level to which each interior designer acknowledges emotions is idiosyncratic, all designers develop sensitivity to place experience).

3. The willingness to speculate and consider alternatives (as we will state the obvious in the following section, interior designers approach design tasks by creating a range of alternative solutions, each of which is evaluated against a set of established criteria).

4. Continuous testing of perceptions, emotions and speculation (again, a part of what interior designers routinely do).

**Embodied Intuition and Learning**

“Architects do not primarily design buildings as physical objects but the images and the feelings of the people who live in them” (Pallasmaa, 2005:450). Unlike architecture, interior design has never been based on formal visual composition, but always on an understanding of experiential reality and meaning of form. Such experiential reality is emotion-based and embodied. If we see the goal of interior design as to strengthen our existential experience, then uncomfortable notions of intuition, feelings, self and culture that form human experience within space need to become equal players in design, together with formal knowledge of technical information.

Let us look at the various systems of learning. Epstein et al (1996) classifies intuition as one of the two main ways humans process information. There are two main systems involved in learning and doing: tacit and deliberate. The tacit system is composed of processes that occur automatically, which includes intuition, perception, and memory triggers. The deliberate system includes logic and analysis and gives us awareness. The two systems work together to produce learning (Hogarth, 2007).

In academia we study conscious learning; we always expect to see conscious learning. But learning is not time or place specific, and it doesn’t happen only on demand. It is constant – every minute of our lives we learn, even when we don’t mean to. Educators generally prefer to pretend that learning only happens in the classroom and disregard the incredible repository of autobiographical experiences available to both teacher and student, those experiences often presenting themselves through intuition.

Momentary experiencing and the memory of past experiences are essential for the construction of meaning in general (Gedlin,
Intuition in Interior Design

1980; Norberg-Schultz, 1980), and of the meaning of “a place as a qualitative totality of complex nature” (Norberg-Schultz, 1980). Or as Myers (2004) points out, “unconscious, intuitive inclinations detect and reflect the regularities of our personal history.” Anthropologist Low, in her theory of embodied spaces, states: “space is occupied by the body, and the perception and experience of that space contracts and expands in relationship to a person’s emotions and state of mind, sense of self, social relations, and cultural predispositions. In Western culture we perceive the self as ‘naturally’ placed in the body, as a kind of prescriptive given” (Low, 2003:10).

Through living our lives and actively interacting with places that house our being, we unintentionally collect a great arsenal of experiences. The essential point is that during the process of designing interiors, intuition draws on our entire experience and not only on what we consciously isolate as relevant information (Solovyova & Nanda, 2008). Studies in neuroscience show that to understand any new situation, people capitalize on existing mental representations that reflect the entire stream of previous experiences associated with that event (Lakoff and Johnson, 1999). In other words, experiences we have shape us as selves, and intuition is an inherent part of the self, most useful in its assistance in shaping future actions.

**Design Process**

The design process is often referred to as a problem-solving process. Do interior designers really solve problems? Poverty is a problem, war is a problem, but creating better places enhances the quality of life. Also, as noticed by Hamad (1990), “problem solving involves applying a known rule or ‘algorithm’ in order to solve problems of an overall type that varies in a minor or predictable way.” Even though there are certain steps necessary to the completion of a project, in interior design there are no exact algorithms to apply or rules to follow in creating better spaces.

Deliberate thought is most valid when a well-defined and accepted model exists – but this is not the case with interior design. In complex decisions, analytic models will not capture all the nuances of the situation. Dane and Pratt (2007:10) claim that “intuition, as a holistically associative process, may actually help to integrate the disparate elements of an ill-defined problem into a coherent perception of how to proceed.” When we make choices or decisions, we base them first on preferences shaped by prior experiences and intuition (Hogarth, 2001; Pedigio, 2005); “one goal of education should be to teach when people should use specific forms of deliberate thought” (Pedigio, 2005:16).

In interior design, when students do not yet have sufficient professional knowledge, the familiarity with the deliberate models of thought or understanding that tell professionals when to apply certain models, they have nothing else to fall back on but intuition and personal preferences. As educators, by not dealing with students’ intuitions, we simply ignore their reality. It is common knowledge that both architecture and interior design briefs are ill-defined. “When a scenario is ambiguous or multifarious, human intuition is as good as it gets” (Pfifer, 2005:4).

**Personality and Learning Style**

Durling, Cross and Johnson (1996:1) wrote that “designers’ strategies for problem-solving are
different from many other professionals, and an intuitive way of working is preferred strongly”. In a 1996 study, they once again proved what MacKinnon discovered in 1962: designers are intuitive.

Psychological studies of American architects and designers in Royal Designers for Industry showed that all designers prefer using their intuition, and rely on intuition when the right idea presents itself (Csordas, 1994).

The results described by Durling and colleagues (Durling et al, 1996) are astounding: over three quarters of architects tested prefer using their intuition. Even more - ninety one percent - of artists prefer to use intuition. These results are quite different from the general population. In Durling, Cross and Johnson’s investigation, seventy one students of design, including product design, interior design, graphic design, furniture design and design marketing were assessed. In that second study, seventy nine percent of students preferred to use their intuition, and a majority also preferred to use their personal perceptions.

“Designers’ creativity seems inextricably bound up with their particular personality types. Intuition seems to be at the core of the designers’ special brand of creativity” (Durling et al, 1996:6). In most situations this means that designers will naturally give intuition the right of way and subordinate rational thinking to it. They enjoy, use and trust intuition the most.

With such overwhelming evidence of intuitive personalities and intuitive preference by designers, ignoring the role of intuition in interior design education is simply negligent, and doesn’t benefit either student learning or instructor pedagogy.

**Design Education**

“Though much attention has been paid to formal methods of problem-solving, these have not gained much currency in design studios. Perhaps these rigid methodologies are a poor cognitive fit with the designers’ loose and more playful way of working” (Durling et al, 1996:6). In this section, this paper will delve into a discussion of interior design education, and provide some ideas regarding how intuition can be better incorporated into the education of interior design students.

**Current Pedagogies**

Officer (2005) compares intuition to twilight: it is experienced routinely but is difficult to describe in terms of time and quality. We use intuition and accept that it is a part of our judgment process. As required in interior design education, whenever students make intuitive decisions based on beliefs, personal preferences and other implicit factors, they always justify them with strong reasons. Intuition cannot and should not be a replacement for analytical thinking; it is an aid to it. Coming up with explicit factors and crisp reasons for intuitive decisions can help one reflect on one’s design process, if that’s the intent. In all other cases, such retroactive justification only promotes students’ mastery of following tutors’ tasks and not the actual learning.

Newstetter and McCracken (2001) published a fascinating paper on design “knowing” and “learning.” Once again they confirmed that learning is filtered and interpreted through the learner’s previous experiences. “Our hunch is
that students of design have well-developed prior conceptions and theories about the nature of design that conflict with understandings held by expert designers,” write Newstetter and McCracken (2001:63). They acknowledge that even though theories that students bring into the classroom are usually naïve (as compared to those of expert designers), they might be partially generalizable and often possess robustness.

Newstetter and McCracken (2001:66) believe that “our pedagogic practices must bring about a confrontation between the learner model and the expert model. Having students follow prescriptive models of design ... does not constitute confrontation of the sort that can begin the dismantling of the mental model”. Salama (2005) generally criticized design pedagogy because it treats students as machines. All of his many reviews of design education (Salama, 1995, 2005, 2006) affirm the idea that the educational system is designed for the system’s own purposes, rather than the students’ learning needs. Salama argues for experiential learning, and so does the author of this paper (Solovyova & Nanda, 2008). As Confucius wisely proclaimed around 450 BC, “Tell me and I will forget. Show me and I may remember. Involve me and I will understand.” Experiential learning is holistic, embodied and involves tacit processes, not simply logic alone. Pushing for reason alone can even be detrimental: if imagination builds on tacit processes, deliberations of that process shut them off (Hogarth, 2001). It is time to open the doors of interior design education to the entire Self of a learner with his or her intellect, but also culture, beliefs, intuitions and memories.

**Conclusion**

This paper has provided evidence that intuition is helpful in design. But if that is the case, why do students who rely on intuition fail just as much, if not more, than students who follow only their logic? Writing about the creative leap, which is also an intuitive connection one can make, Hamad states (1990) that one has to master relevant skills and knowledge before such a leap can occur. Hogarth echos Hamad (2001): to be able to use intuition for positive results, one needs to have sufficient experience in the desired domain. Intuition is domain-specific (Hamad, 2001) – it builds upon expertise in a particular field earned through experience. In other words, the more knowledge and skill students acquire in the field of interior design, the more likely they will have fruitful intuitions guiding their designs.

Salama rightly notices that “knowledge is not a substitute for architectural imagination but inadequate knowledge would handicap the general level of design” (Salama, 2003:69). Preparation maximizes the probability of creativity and intuition (Hamad, 1990; Hogarth, 2001). True life experience (that is the essence of experiential learning) offers much richer and holistic preparation than a sequence of discrete coursework.

So what can we do as design educators? There is no sure strategy to infuse fruitful intuitive input into the design process. The first step will be to open our minds and face the reality of the role of intuitive decision-making in interior design. Then we can foster productive intuition by providing a “kind environment” (Hogarth, 2001) and engaging our students in activities like
Intuition in Interior Design

Irina Solovyova

the “design psychology toolbox” (Israel, 2003), facilitating exploration of the student’s intimate connections with place. Such exercises help to consciously uncover intuitive decisions through explorations of the past.

“The only real valuable thing is intuition,” said Albert Einstein. Let’s trust our intuition, and allow our students trust theirs.

Acknowledgement
This paper will also be published by Middlesex University Press in 2009 in the book entitled: inter_multi_trans_actions: creative practice at the boundaries of architecture, design and art.

References


Intuition in Interior Design


-------------------------

Irina Solovyova

Irina Solovyova is an Assistant Professor in Interior Design Program at the University of Texas at San Antonio, and will receive a Ph.D. in Architecture from Texas A&M University in December 2008. She was born in Russia where she received Diploma of an Architect from Volgograd State Architectural and Engineering University. Before joining UTSA Irina taught at Texas A&M University and University of Idaho. Her research area of interest is emotional component of memory as related to design, influence of autobiographical experiences of designers on the product and process of design, and design pedagogy. She can be reached at irina.solovyova@utsa.edu
OUTDOOR SPACE QUALITY:
CASE STUDY OF A UNIVERSITY CAMPUS PLAZA

Dicle Aydin and Ummugulsum Ter

Abstract

This article studied the concept of campus plaza, i.e. the outdoor space of the Selcuk University located in Konya, Turkey. The objective of the study in which the survey, observation and photographic methods were used, was to examine the plaza as an outdoor space providing individual and social benefits to campus people and to determine the principles regarding the establishment of this space. Two hundred forty-three students participating in the survey were asked about the outdoor spaces they use in the campus area, the qualities of the plaza, their purposes and the frequency of plaza use, and a descriptive analysis was performed to determine the plaza’s quality. Additionally, a correlation analysis was carried out to evaluate the relationship between the landscape accessory and the manner in which the users’ senses were affected by the experienced space (profiles of the space). At the end of this study, two main components determining the campus plaza’s quality were found: (i) qualities of the physical environment (climatic features, location of plaza, its relation with the surrounding structuring, pedestrian / vehicle relation in terms of accessibility, fixed elements / equipment in the area, quality of open space area, quality of landscape accessory and area’s being in good repair) (ii) user characteristics. User characteristics also comprised two quality criteria: (i) the behavioural and functional quality, (ii) the visual quality.

Keywords:
Quality; outdoor space; campus outdoor space; plaza design; criticism.

Introduction

The word “quality” was derived from the Latin word quails, which means “the way of formation” and can be defined as “congruity to the desired criteria,” “level of the product or service in meeting the needs of consumers” or “congruity to the usage, the need”. The pertinent literature about this topic reveals that some concepts like liveability, quality of life, sustainability in different academic disciplines (psychology, sociology, environmental sciences, economics) and in the areas of specialization (planning, architecture, engineering, health, social policy) are judged by the criteria of “quality”. According to Koç (1998), the quality of the lived environment, quality of life and social structure interact with each other. Significant developments in the quality of the environment will affect life positively, and the improvements in quality of life will consequently, positively influence the quality of space. This interaction will increasingly take part in the formation of a quality-sensitive...
life culture.

Architects and urban planners work with a concept of space that influences the idea of lived environment whose quality directly affects peoples’ expectations. Accordingly, the practicality and capability to meet the users’ needs, and, therefore, the space’s utility are the important indicators of the spatial quality.

In this context, the space shows a chaining joint structure starting from the inner doors of our building and extending to the urban spaces and natural areas surrounding the city. One of the most important links of this chain is composed of the urban outdoor spaces that are the areas increasing the human-nature relations, ensuring the integration with the natural environment and meeting the biological, physical, and psycho-social needs. While the spaces designed with respect to users’ needs in mind are frequently adopted and owned, the spaces not adopted or owned are unused, neglected and changed by time.

The evaluation of the lived environment in relation to the users is important for sustaining the liveability, and the data obtained after the evaluation provide inputs for the planning and design studies. The design evaluation is concerned with assessing the effectiveness of the designed environments for the users which have an important influence on the human experience (Sanoff, 1992). It can facilitate activities, create a mood or feeling, relieve or create human tension and stress. Generally speaking, the designed environments can support satisfaction, happiness and effectiveness (Sanoff, 1990).

The refinement of the design principles of plaza in campus areas is important to improve the currently existing plazas and also to provide the data for new campus area designs. In this study, the outdoor space formations and their uses were specifically handled in terms of campus areas for the aim of assessing the outdoor spaces that provide individual and social benefits in university campus areas and determining the principles guiding the design of these spaces. By the aid of this study, the quality of plazas at universities still under academic and physical construction or for prospective institutions will be contributed.

**Determinants of Outdoor Spatial quality in Campus Areas**

University campi have similarities with the urban pattern composed of roads, buildings and spaces. When these components, as elements of the physical environment, are taken into consideration in terms of the concept of space and structured environment, they may be defined as the environment’s utility for individual and social uses. Rapoport (2004) stated that these environments have several components, and the structured environment is composed of fixed (infrastructure and buildings), half-fixed (outdoors: trees, boundary elements, signs, billboards, lighting elements, benches etc.) and non-fixed (users, user actions and vehicles) elements. Half-fixed components are the important determinants of the environment’s influence on user attitudes. The outdoor spaces are shaped with fixed and half-fixed components in relation to the user needs in the scope of physical environment. The quality of the outdoor spaces formed by the components coming together is a type of life quality determinant.
The outdoor spaces on campus support the relationships between people and increase the quality of university life (Biddulph, 1999). Mitchell (2000) defines as health, security, physical environment, personal development and community development as components that contribute to a better quality of life. Kamp et al. (2003) considered that the synonymously used concepts like quality of life, environmental quality, and liveability were related to the areas of specialization like planning architecture, public engineering, public health and policy.

Smith et al. (1997) developed a quality list and the principles of need, and a list of physical form criteria as compiled from the literature. They presented this latter list as a review of relevant findings from various fields of thought (community psychology, environmental psychology, urban design, sense of space theories, design professional publications, human behavioural research studies). These criteria were also elaborated through the development of a matrix linking quality to the physical form (Esin and Ozsoy, 2003). While the important elements of quality principles were liveability, character, connection, mobility, personal freedom and diversity, the physical form criteria were categorized under community, urban block, buildings, streets, pedestrian pavements, open space, vegetation and feature areas. This extensive list of physical form criteria was put together with respect to the quality of the community. The examples of strong elements are open space areas, outdoor amenities and “walk ability” which correspond to active or passive outdoor spaces supported by a pedestrian circulation network between the campus buildings on campus.

The quality of outdoor spaces is likewise judged according to how well it responds to the spatial quality and the users’ needs that it is important to determine the outdoor spaces’ purpose and user actions. Besides the positive effects on physical, mental, and social health, the participation in outdoor activities also increases self-confidence and self-respect, leads to positive changes in personal skills, social behaviours, body and personality development, and general behaviours (Mc Avoy, 2001). People use outdoor spaces for learning, discovering, examining and researching. In this context, the outdoor activities are evaluated as the learning opportunities. We must stress that these outdoor activities should not be considered separately from a general education (Wells and Merriman, 2002; Mansuroglu, 2002). Besides these uses, the outdoor spaces on campus relieve stress stemming from the boredom or density of the lessons and provide a place for the academic community to relax (Marcus and Wischemann, 1990).

There is a strong relationship between the quality of the outdoor spaces and the activities carried out in these spaces that the quality of the outdoor spaces either supports or negatively affects the activities performed in those spaces. The outdoor activities were divided into three parts by Gehl (1987): (i) necessary activities, (ii) optional activities and (iii) social activities. When outdoor areas are of poor quality, only strictly necessary activities occur, and if the quality of the outdoor spaces is good, optional activities will occur with an increasing frequency. Furthermore, as the levels of optional activities rise, the number of social activities usually increases substantially.
When Gehl’s (1987) outdoor activities and campus outdoor spaces were associated, the campus outdoor spaces were observed to be important not only for compulsory activities but also for optional and social activities due to users’ needs. The needs of students, who make up the majority of those who use campus spaces, determine the important factors for defining quality outdoor spaces.

The quality of landscape elements and their response to user needs were accepted as a criterion in supporting outdoor activities (Marcus and Wischemann, 1990). Dober (2000) stated that the functional, convenient, safe, nice, exhilarating experiences of a campus user who goes from one space to another were the desired qualities for a good landscape order. Availability and utility, aesthetic attraction, fluency between inner and outdoor spaces, suitability for the realization of activities, safety, variety in use and convenience for every user of the outdoor spaces were described as the principles of spatial quality (Oktay, 1999; Marcus and Francis 1990).

Yildiz and Sener (2003) associated the quality of outdoor spaces with the concept of “use value”. Use value is calculated using the components of activity density, activity frequency, use density and use time. In other study, Yildiz and Sener (2006) considered physical features, enclosure, spatial layout, aesthetic/visual quality, pedestrian movement, context, planned activities, period of time and user profile as the factors that can influence the use value. Determining the use value, and its role in the overall design, is important for constituting the outdoor spatial quality.

Abu-Ghazzeh (1999) worked on the environmental quality of the campus outdoor spaces at the University of Jordan and found three major components including physical/ecological quality, behavioural/functional quality, and aesthetic and visual quality. Marcus and Wischemann (1990) examined the outdoor spaces in the campus according to their use, and took them as front porch, front yard and backyard near the buildings, and campus entrances, plaza spaces and outdoor study spaces in terms of whole campus.

When the components of campus outdoor spaces in which students are the predominant users are described and realized, the level of the current quality will easily gain meaning. Determining the needs and behaviours, meeting their expectations, and arranging the spaces according to their needs will aid in assessing the spatial qualities. The actions related to these are
described in Figure 1 with the sub-contents and equipments of those spaces. Additional tools for measuring the outdoor spatial quality are the users’ subjective evaluation and their points of view about the spaces they use/experience. These criteria determine what they accept or reject.

**Methodology**

In evaluating the quality of Ataturk Plaza, which was selected as the sample area, a survey was applied and the following qualities related to outdoor space were determined in parallel to the data obtained through the literary research:

—user behaviours, needs, expectations, actions in plaza
—equipment/accessories in the plaza, and their qualities
—sensory effects on the users in their preferences of plaza
—whether there is a relation between the sensory effects and the qualities of the landscape elements.

The students of Selcuk University’s Alaaddin Keykubat Campus were selected as the focus group. There were 12 faculties in the research area, and the samplings of this study were composed of a heterogeneous group of 243 undergraduate students (nearly 20 students whom were randomly chosen from each faculty) who have come to Selcuk University from the different regions of Turkey.

The users were surveyed through the questionnaire in order to evaluate their opinions about the area by the help of the Likert scale, and adjective scales were used to obtain the impression of the users’ reaction to some aspects of the physical environment which provides important input for the description of the users’ perceptions related to the space.

The research was conducted through a descriptive statistics to determine the use purposes of the outdoor spaces and their quality, which also reveal the negative attitudes and exigencies of the respondents. Then, a correlation analysis investigating the relationship between the users’ sensory experience of outdoor space (profiles of the space) and the landscape accessory was performed.

The quality of the components was divided into

<table>
<thead>
<tr>
<th>Item</th>
<th>Item description</th>
<th>Score range</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>very good</td>
<td>4.21–5.00</td>
</tr>
<tr>
<td>4</td>
<td>good</td>
<td>3.41–4.20</td>
</tr>
<tr>
<td>3</td>
<td>moderate</td>
<td>2.61–3.40</td>
</tr>
<tr>
<td>2</td>
<td>bad</td>
<td>1.81–2.60</td>
</tr>
<tr>
<td>1</td>
<td>very bad</td>
<td>1.00–1.80</td>
</tr>
</tbody>
</table>

If the value is ≤ 2.33 the quality is bad. If the value is > 2.33 the quality is good.

<table>
<thead>
<tr>
<th>Item</th>
<th>Item description</th>
<th>Score range</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>very good</td>
<td>4.21–5.00</td>
</tr>
<tr>
<td>4</td>
<td>good</td>
<td>3.41–4.20</td>
</tr>
<tr>
<td>3</td>
<td>moderate</td>
<td>2.61–3.40</td>
</tr>
<tr>
<td>2</td>
<td>bad</td>
<td>1.81–2.60</td>
</tr>
<tr>
<td>1</td>
<td>very bad</td>
<td>1.00–1.80</td>
</tr>
</tbody>
</table>

If the value is ≤ 3.40 the quality is bad. If the value is > 3.40 the quality is good.

Table 1: Gap Widths of Trio Likert Scale. (Source: Authors).

Table 2: Gap Widths of Quintet Likert Scale. (Source: Authors).
five Likert scale categories: very good, good, normal, bad, very bad. The formula of Gap width = series width / number of the group is the grading scale for comparing the arithmetic averages of the Likert-type scale.

The result was calculated as 2/3 = 0.7 for the Likert-type scale of three, and as 4/5 = 0.8 for the Likert-type scale of five. The gap widths of the scales are shown in Table 1 and Table 2, and the results were analyzed according to these values. The average of the participants’ answers was evaluated as their points of view about the space and therefore the spatial quality.

**Description and Development Period of the Research Area**

The city of Konya is located at the Central Anatolian Region, in which the dominant climate type is terrestrial climate, i.e. the summers are hot and dry, and the winters are mild and snowy. Since Konya has less precipitation, the step vegetation is widespread. Alaaddin Keykubat Campus is located at the northern part of Konya, 25 km away from the city centre, to which the students come by using the collective transportation vehicles (tram and minibus).

In the campus, there are education and training buildings, research buildings, administrative buildings, accommodations (student dormitories and public housing), social, cultural and commercial spaces, a health centre and religious facilities (Figure 2).

The growing campus area and the increased needs provoked some certain changes in the settlement plan of the campus area. In the revised plan, when the faculties were positioned, the pedestrian access to the central area of the campus was ignored, and the area designed to be a plaza in the first plan was transformed into an open space area.

Atatürk Plaza and its surroundings are the open space areas of the campus which were evaluated by this research. The plaza covers a 4.4 hectare arranged area whose landscape was designed for meeting and relaxing.

A green area composed of long and small trees and bushes supports the perceptibility in terms of area size. There are concrete benches without backrests placed inside the green area along the pedestrian pavements and some other benches existing under the trees in patches. The lighting elements, billboards, rubbish bins and a fountain are of the landscape accessories of the area (Figure 3).
The frequent intersections between pedestrian and vehicle roads shown in Figure 4 prevent the continuity of the pedestrian circulation. The open space areas were formed away from the buildings, roads and parking lots, and the plaza shown in Figure 3 was perceived as the focus point of vehicle and pedestrian traffic.

Findings: Assessing the Quality of Atatürk Plaza

Findings Based on Observation

In general, students use pedestrian pavements to pass through the green areas. The density of users between the classroom halls and plaza is especially worthy of attention. Optional activities (resting, eating, studying, chatting, etc.) occur on the green space and under the shade trees and benches arranged on the pedestrian pavement (Figure 5).

The green areas were separated from each other by the pedestrian pavements, and a meeting area was named by the Atatürk monument. At the beginning of the academic year and in May, festivals occur in the area; live musical performances, vending, advertising and entertainment activities are carried out during
these festivals and consequently the area’s user density naturally increases (Figure 6).

Figure 5: Behavioural Map and Spaces in Atatürk Plaza. (Source: Authors).

Circle dimensions show the user density of the different places in the area. The behavioural map was formed by considering the observations carried out between hours 12.00 and 13.15 everyday.

Figure 6: Festivals are Arranged in the Meeting Area. (Source: Authors).
Findings based on the Survey

When the users were asked for what reasons they use the plaza, it was determined that they mostly prefer the area for relaxing, meeting with friends, and waiting for the lesson hours.

Sixty percent of the respondents reported that they arrive to the area comfortably, whereas 39.9% indicated that there was no pedestrian pavement leading to the plaza, and the pavements frequently intersecting with the vehicular roads make the pedestrian movement difficult. The respondents who cited difficulty arriving are those whose class buildings are located farther away. Nearly 45% of the respondents cited leisure activities like going to the café as the reason why they prefer using the area. Ninety-three percent of the respondents reported that they use the plaza in daytime, and cannot use it at night for safety reasons.

The qualities of the plaza were determined primarily in terms of general appearance and sensory effects on the user. The appearance of the outdoor spaces is considered to be an important factor in the space’s attraction and inviting quality. Users cited the sensory effect as their reason for preferring the space. The plaza was examined with this criterion to obtain the results in Table 4. Nearly 54% of the respondents considered that the general appearance of Ataturk Plaza is moderate ( ̄=2.81). The respondents evaluated as “moderate” the qualities of the space’s being comfortable, relaxing, quiet, clean, safe, orderly. The respondents rated the entertainment quality of the area as “bad” (Table 3). The general evaluation over the averages is “moderate” with the value of ̄=3.03.

The survey asked for the respondents’ opinions regarding the quality of the landscape accessory elements in the plaza. The landscape elements in the outdoor spaces are the half-fixed components that provide the spatial quality. The individual quality of the landscape accessories that animate the space is accepted as the determining element of the total quality. 36.6% of the respondents rated the rubbish bins, 42.4% rated ground covering, 35.4% rated the

<table>
<thead>
<tr>
<th></th>
<th>Very bad</th>
<th>Bad</th>
<th>Moderate</th>
<th>Good</th>
<th>Very good</th>
<th>( \bar{X} )</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>What is your opinion about the general appearance of the Ataturk Plaza?</td>
<td>18 7.4</td>
<td>54 22.2</td>
<td>131 53.9</td>
<td>36 14.8</td>
<td>4 1.6</td>
<td>2.81</td>
<td>0.84</td>
</tr>
<tr>
<td>Comfortable</td>
<td>10 4.1</td>
<td>28 11.5</td>
<td>103 42.4</td>
<td>86 35.4</td>
<td>16 6.6</td>
<td>3.29</td>
<td>0.90</td>
</tr>
<tr>
<td>Relaxing</td>
<td>16 6.6</td>
<td>39 16.0</td>
<td>97 39.9</td>
<td>77 31.7</td>
<td>14 5.8</td>
<td>3.14</td>
<td>0.98</td>
</tr>
<tr>
<td>Entertaining</td>
<td>52 21.4</td>
<td>96 39.5</td>
<td>70 28.8</td>
<td>17 7.0</td>
<td>8 3.3</td>
<td>2.31</td>
<td>0.99</td>
</tr>
<tr>
<td>Quietness</td>
<td>21 8.6</td>
<td>29 11.9</td>
<td>95 39.1</td>
<td>77 31.7</td>
<td>21 8.6</td>
<td>3.19</td>
<td>1.04</td>
</tr>
<tr>
<td>Clean</td>
<td>21 8.6</td>
<td>48 19.8</td>
<td>96 39.5</td>
<td>71 29.2</td>
<td>7 2.9</td>
<td>2.98</td>
<td>0.98</td>
</tr>
<tr>
<td>Safety</td>
<td>33 13.6</td>
<td>55 22.6</td>
<td>90 37.0</td>
<td>53 21.8</td>
<td>12 4.9</td>
<td>2.82</td>
<td>1.07</td>
</tr>
<tr>
<td>Orderly</td>
<td>26 10.7</td>
<td>65 26.7</td>
<td>98 40.3</td>
<td>47 19.3</td>
<td>7 2.9</td>
<td>2.77</td>
<td>0.98</td>
</tr>
<tr>
<td>General evaluation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>3.03</td>
<td>0.52</td>
</tr>
</tbody>
</table>

Table 3: Respondents’ Opinions about Ataturk Plaza’s General Appearance. (Source: Authors).
lighting elements, 41.2% rated the quality of the green, 37.9% rated the boundary elements, and 26.3% rated the monuments as “moderate”. Moreover, sitting elements, water items and billboards were considered as “bad” (Table 4). The general evaluation of the landscape elements was observed as moderate with the value of =3.63.

The statistical analysis was applied to the data in order to verify the correlations between the sensorial effects of space and the landscape components of space. As shown in Table 5, there is a meaningful direct-way (positive) relationship between the landscape accessory and the sensory values of a green area.

<table>
<thead>
<tr>
<th>Sitting elements</th>
<th>very bad</th>
<th>bad</th>
<th>moderate</th>
<th>good</th>
<th>very good</th>
<th>X</th>
<th>S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sitting elements</td>
<td>13.8</td>
<td>29</td>
<td>82.5</td>
<td>67</td>
<td>7.5</td>
<td>3.13</td>
<td>1.28</td>
</tr>
<tr>
<td>Rubbish bins</td>
<td>5.8</td>
<td>22</td>
<td>9.1</td>
<td>54</td>
<td>22.2</td>
<td>36.6</td>
<td>20.6</td>
</tr>
<tr>
<td>Ground covering</td>
<td>11.9</td>
<td>53</td>
<td>33.3</td>
<td>103</td>
<td>42.4</td>
<td>49</td>
<td>20.2</td>
</tr>
<tr>
<td>Lighting elements</td>
<td>13.3</td>
<td>62</td>
<td>25.5</td>
<td>86</td>
<td>35.4</td>
<td>37</td>
<td>15.2</td>
</tr>
<tr>
<td>Water items</td>
<td>23.0</td>
<td>65</td>
<td>26.7</td>
<td>54</td>
<td>22.2</td>
<td>13</td>
<td>5.3</td>
</tr>
<tr>
<td>Quality of the green</td>
<td>2.5</td>
<td>40</td>
<td>16.5</td>
<td>100</td>
<td>41.2</td>
<td>65</td>
<td>26.7</td>
</tr>
<tr>
<td>Boundary elements</td>
<td>37</td>
<td>70</td>
<td>28.8</td>
<td>92</td>
<td>37.9</td>
<td>39</td>
<td>16.0</td>
</tr>
<tr>
<td>Monuments</td>
<td>37</td>
<td>24</td>
<td>9.9</td>
<td>64</td>
<td>26.3</td>
<td>93</td>
<td>38.3</td>
</tr>
<tr>
<td>Billboards</td>
<td>9.5</td>
<td>57</td>
<td>23.5</td>
<td>85</td>
<td>35.0</td>
<td>42</td>
<td>17.3</td>
</tr>
<tr>
<td>General evaluation</td>
<td>23.0</td>
<td>57</td>
<td>23.5</td>
<td>85</td>
<td>35.0</td>
<td>42</td>
<td>17.3</td>
</tr>
<tr>
<td>General evaluation</td>
<td>3.63</td>
<td>97</td>
<td>3.63</td>
<td>97</td>
<td>3.63</td>
<td>97</td>
<td>3.63</td>
</tr>
</tbody>
</table>

Table 4: Respondents’ Opinions about the Quality of the Landscape Accessory Elements in the Atatürk Plaza. (Source: Authors).

Table 5: Correlation Matrix between the Sensorial Effects of Space and the Landscape Components of Space. (Source: Authors).

* Correlation is significant at the 0.05 level. ** Correlation is significant at the 0.01 level.
Nearly 78% of the respondents stated that they do not enjoy using the plaza. Users considered that the changes related to ground covering material and arrangements to create a more efficient use of space are “necessary”. Furthermore, comfortable sitting units in the plaza, arrangement of the spaces for group use, and the quality improvement and the increase in the number of the lighting elements are considered “very necessary”. The respondents are of the opinion that more rubbish bins, arrangement of green spaces for different uses, establishment of elements for shade and cover from rain, regular maintenance, use of aesthetic materials in the arrangement, facilities for the disabled, establishment of commercial units like a canteen or café, and arrangement of activity areas are “very necessary” (Table 6). The respondents also expressed that they will be pleased to use the plaza more often on the condition that these arrangements are realized (86.4%).

### Discussion of Results

The results showed that the plaza’s quality during the planning period of the campus changed after the timely decisions and its actual use brought out the defects in spatial quality. The detrimental factors affecting the plaza’s use are the integrated pedestrian and vehicle circulation throughout the whole campus, the common areas are far from the centre, and buildings are distant from each other and from the plaza. Administrative changes ignoring the users’ needs and use purposes cause user dissatisfaction and therefore decline in the use of these spaces.

The effects of terrestrial climate in the plaza showed that the outdoor spaces can be used more in spring and summer. No arrangements were made for protection from in climate weather conditions in the plaza, and this prevents its use in rainy weather except for its

<table>
<thead>
<tr>
<th></th>
<th>not necessary</th>
<th>necessary</th>
<th>very necessary</th>
<th>$\bar{X}$</th>
<th>$S$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Establishment of comfortable sitting units</td>
<td>5 2.1</td>
<td>64 26.3</td>
<td>174 71.6</td>
<td>2.69</td>
<td>0.50</td>
</tr>
<tr>
<td>Arrangement of the spaces for group use</td>
<td>11 4.5</td>
<td>73 30.0</td>
<td>159 65.4</td>
<td>2.61</td>
<td>0.57</td>
</tr>
<tr>
<td>Improvement of quality and increase in the number of lighting elements</td>
<td>18 7.4</td>
<td>100 41.2</td>
<td>125 51.4</td>
<td>2.44</td>
<td>0.63</td>
</tr>
<tr>
<td>Changing of the ground covering material</td>
<td>65 26.7</td>
<td>102 42.0</td>
<td>76 31.3</td>
<td>2.04</td>
<td>0.76</td>
</tr>
<tr>
<td>Increase in the number of rubbish bins</td>
<td>14 5.8</td>
<td>112 46.1</td>
<td>117 48.1</td>
<td>2.42</td>
<td>0.61</td>
</tr>
<tr>
<td>Arrangement of green space for different uses</td>
<td>8 3.3</td>
<td>87 35.8</td>
<td>148 60.9</td>
<td>2.58</td>
<td>0.56</td>
</tr>
<tr>
<td>Establishment of elements for shade and cover from rain</td>
<td>15 6.2</td>
<td>58 23.9</td>
<td>170 70.0</td>
<td>2.64</td>
<td>0.59</td>
</tr>
<tr>
<td>Regular maintenance</td>
<td>9 3.7</td>
<td>80 32.9</td>
<td>154 63.4</td>
<td>2.59</td>
<td>0.56</td>
</tr>
<tr>
<td>Use of aesthetic materials in the arrangement</td>
<td>22 9.1</td>
<td>91 37.4</td>
<td>130 53.5</td>
<td>2.44</td>
<td>0.65</td>
</tr>
<tr>
<td>Facilities for the disabled</td>
<td>11 4.5</td>
<td>56 23.0</td>
<td>176 72.4</td>
<td>2.68</td>
<td>0.56</td>
</tr>
<tr>
<td>Establishment of commercial units like canteen, café etc.</td>
<td>36 14.8</td>
<td>72 29.6</td>
<td>135 55.6</td>
<td>2.41</td>
<td>0.73</td>
</tr>
<tr>
<td>Arrangement of activity areas</td>
<td>18 7.4</td>
<td>84 34.6</td>
<td>141 58.0</td>
<td>2.51</td>
<td>0.63</td>
</tr>
</tbody>
</table>

Table 5: Correlation Matrix between the Sensorial Effects of Space and the Landscape Components of Space. (Source: Authors).
use as an avenue. Leafy trees in the plaza are important because they shade users engaged in some activities.

Ataturk Plaza whose location contributes to good accessibility exists at the centre of the campus. However, as some faculty buildings are far from the plaza, the use density in terms of accessibility decreases. Access problems take place due to the vehicle routes surrounding the plaza to the north, south and east. The plaza’s central location on campus makes it an ideal transit zone. For optional activities in the plaza, users are selective who engage in optional activities (relaxing, sitting, reading, studying, and meeting with friends) seated at the base of shade trees, on grass swards, benches or the roadside pavement. Activities are carried out individually or in groups, however the absence of activity areas and sitting spaces for group use restricts the group activities. The realization level of the optional activities is related to the elements determining the quality of the plaza. The user density in certain areas of the whole plaza stems from the differences in the qualities of the spaces. Therefore, it cannot be said that there is quality in terms of space that supports the social activities.

It is impossible to use the plaza at night, because the student dormitories are far from the plaza, and naturally there will be no functions to attract students to the plaza or a nearby area (cafe, student clubs, sale units etc.) at which a security problem occurs due to the inadequate lighting causing the students not to find the plaza safe in the darkness of the night.

It was determined that the quality of the landscape accessories (sitting elements, rubbish bins, ground covering, lighting elements, water elements, quality of green areas, boundary elements, monuments, billboards) in the plaza was in bad condition. Especially the sitting elements are qualified as “bad“ because of their concrete structure, the monotonous arrangements, and inadequate maintenance. While there are a few unused billboards in the plaza, a fountain is the only water source of the plaza. These kinds of bad quality landscape accessories also affect the spatial quality unfavourably.

Users evaluated the plaza according to the criteria measuring the plaza’s features of being comfortable, relaxing, entertaining, quiet, clean, safe, and orderly (these criteria are expected for outdoor spaces). They determined the value of the sensory effects approached through the concrete qualities which are the important attractive factors in terms of the use of the space. The plaza’s sensory effects on the users are accepted as the space’s determining profiles/values. As the quality of the space has a lower value, the user preference for the space will consequently take the lowest attraction value.

In this study, whether there is a relationship between the sensory effects and the landscape elements was researched via correlation analysis, and was determined as a direct-way positive relation. The quality of the green and the sitting elements especially determines the sensory effects. A description of the experienced spaces as “orderly” and “clean” is directly related to the existence and the quality of all the landscape elements qualifying the area. The users’ points of view about the space are preferred as the motives for using the space.
The visual quality is also negatively affected due to the lack of care and attrition.

The plaza’s users expect the establishment of comfortable settlement units for making the plaza liveable, usable, and lively. Some of these expectations are the arrangement of the spaces for group uses; the quality improvement of the lighting elements and increasing their number; changing the ground covering material; increasing the number of rubbish bins; the arrangement of the open-space areas for different uses; the establishment and the good maintenance of the elements providing shaded and protected spaces from sun, rain etc. by using aesthetic materials; forming facilities for the disabled people; the establishment of commercial units like canteen, café, etc.; and the arrangement of multi-purpose activity areas. The absence of these elements in the space or their presence in bad condition shows that the quality of the space is “bad”. Therefore, these expectations should be evaluated in order to have spaces of high spatial quality.

Conclusion

This study clarified that the quality of the university’s campus plaza could be determined by the help of two major components: (i) the features of the physical environment (ii) user characteristics. Furthermore, the user characteristics involve two quality criteria: (i) behavioural and functional quality, (ii) visual quality (Figure 7).

(i) Components of the physical environment
The climatic features, the plaza’s location and its relation with the surrounding structures, the pedestrian/vehicle relationships in terms of accessibility, the fixed elements/equipment in the area (canteen, café, etc.), the quality of the open space area, the quality of the landscape accessories and the area’s maintenance were determined to be the crucial components characterizing the spatial quality in the whole campus.

(ii a) Behavioural and functional quality
The optional activities carried out in the plaza are related to the overall environment provided by the area. The plaza’s accessibility, the quality of the landscape accessories and the spatial order in the plaza are also the indicators of how frequently the optional and the social activities will be carried out in the plaza. The physical components describing the plaza (landscape accessories, spatial arrangements, and quality of the open-space, etc.) determine the potential user activities. The quality of the elements constituting the plaza is a reason why users prefer to sit underneath the trees or on the green.

(ii b) Visual quality and the sensory effect of space on users
The user prefers a space that stimulates his senses positively and provides pleasant experiences for him. However, the user perceives the space will contribute to the quality of this space. The values affecting the spatial quality are cleanliness, comfort, relaxing atmosphere, entertainment potential, proper landscaping and security. The plaza’s stimulation of the users’ senses is a function of landscape accessory and the space’s general appearance. This indicates that the quality of the components is integrated with the quality of the whole space.
The presence of high quality outdoor spaces in the campus is important for increasing the users’ satisfaction and facilitating optional, social activities outside the class hours. In order to improve the current situation and provide data for future designs, we must determine the criteria of high quality spaces inside the university campi and determine users’ expectations for the designed areas. Although there are studies related to outdoor spaces, the current investigation hereby contributes to the concept of quality criteria relevant to the outdoor spaces in the university campi.

References


Mc Avoy, L. (2001). Outdoors for Everyone:


---

**Dicle Aydin**

Dicle Aydin is an Assistant Professor in the department of Architecture, Faculty of Engineering and Architecture, Selcuk University. She received her Master and Ph. degrees in building design from the same university. She received Ph. Degree in 2001 about architectural programming. Her interests include developing design and programming criteria different building/spaces, performance concept and evaluation of reusing buildings for new functions. Her articles are published about hospital programming, building types in vernacular settlements, reuse and programming, evaluation of buildings in academic jounals. She attended several conferences and presented papers. She studied with teamwork restoration project process of Sahib Ata Caravanserai (2004), designed Faculty of Education (2006) and participated to architectural competitions. She can be contacted at daydin@selcuk.edu.tr, dicle_a@yahoo.com

---

**Ümmügülsüm Ter**

Ümmügülsüm Ter is a city planner, has a master degree (1998), and Ph.D. (2002) in landscape architecture from Ankara University Department of Landscape Architecture. She is an Assistant of Professor of City and Regional Planning currently teaching at the Faculty of Engineering and Architecture, Selcuk University, Konya, Turkey. Her research interests include urban conservation, urban design, urban spatial quality, landscape design and urban public spaces. She specializes in spatial quality in public space. She is currently a member of Preservation Committee of the Culture and Nature Riches since 2004. She attended several conferences and presented papers. She can be contacted at gulsumter@gmail.com