

# TeMA

Journal of  
Land Use, Mobility and Environment

The three issues of the 12th volume will think again about the debate on the definition and implementation of methods, tools and best practices connected to the evolution of the main scientific topics examined in depth in previous TeMA Journal volumes.

Tema is the Journal of Land use, Mobility and Environment and offers papers with a unified approach to planning and mobility. TeMA Journal has also received the Sparc Europe Seal of Open Access Journals released by Scholarly Publishing and Academic Resources Coalition (SPARC Europe) and the Directory of Open Access Journals (DOAJ).



THE TIMES THEY ARE A-CHANGIN'

Vol.12 n.2 Agust 2019

print ISSN 1970-9889 e-ISSN 1970-9870  
University of Naples Federico II

# TeMA

Journal of  
Land Use, Mobility and Environment

## THE TIMES THEY ARE A-CHANGIN’

2 (2019)

**Published by**

Laboratory of Land Use Mobility and Environment  
DICEA - Department of Civil, Architectural and Environmental Engineering  
University of Naples "Federico II"

TeMA is realized by CAB - Center for Libraries at "Federico II" University of Naples using Open Journal System

Editor-in-chief: Rocco Papa  
print ISSN 1970-9889 | on line ISSN 1970-9870  
Licence: Cancelleria del Tribunale di Napoli, n° 6 of 29/01/2008

**Editorial correspondence**

Laboratory of Land Use Mobility and Environment  
DICEA - Department of Civil, Architectural and Environmental Engineering  
University of Naples "Federico II"  
Piazzale Tecchio, 80  
80125 Naples  
web: [www.tema.unina.it](http://www.tema.unina.it)  
e-mail: [redazione.tema@unina.it](mailto:redazione.tema@unina.it)

The cover image is a photo processing of an original picture by SeanPavonePhoto, iStock



TeMA. Journal of Land Use, Mobility and Environment offers researches, applications and contributions with a unified approach to planning and mobility and publishes original inter-disciplinary papers on the interaction of transport, land use and environment. Domains include: engineering, planning, modeling, behavior, economics, geography, regional science, sociology, architecture and design, network science and complex systems.

The Italian *National Agency for the Evaluation of Universities and Research Institutes* (ANVUR) classified TeMA as scientific journal in the Area 08. TeMA has also received the *Sparc Europe Seal for Open Access Journals* released by *Scholarly Publishing and Academic Resources Coalition* (SPARC Europe) and the *Directory of Open Access Journals* (DOAJ). TeMA is published under a Creative Commons Attribution 3.0 License and is blind peer reviewed at least by two referees selected among high-profile scientists. TeMA has been published since 2007 and is indexed in the main bibliographical databases and it is present in the catalogues of hundreds of academic and research libraries worldwide.

#### **EDITOR IN-CHIEF**

Rocco Papa, University of Naples Federico II, Italy

#### **EDITORIAL ADVISORY BOARD**

Mir Ali, University of Illinois, USA  
Luca Bertolini, University of Amsterdam, Netherlands  
Luuk Boelens, Ghent University, Belgium  
Dino Borri, Polytechnic University of Bari, Italy  
Enrique Calderon, Polytechnic University of Madrid, Spain  
Roberto Camagni, Polytechnic University of Milan, Italy  
Derrick De Kerckhove, University of Toronto, Canada  
Mark Deakin, Edinburgh Napier University, Scotland  
Aharon Kellerman, University of Haifa, Israel  
Nicos Komninos, Aristotle University of Thessaloniki, Greece  
David Matthew Levinson, University of Minnesota, USA  
Paolo Malanima, Magna Græcia University of Catanzaro, Italy  
Agostino Nuzzolo, Tor Vergata University of Rome, Italy  
Rocco Papa, University of Naples Federico II, Italy  
Serge Salat, Urban Morphology and Complex Systems Institute, France  
Mattheos Santamouris, National Kapodistrian University of Athens, Greece  
Ali Soltani, Shiraz University, Iran

#### **ASSOCIATE EDITORS**

Rosaria Battarra, National Research Council, Institute of Mediterranean studies, Italy  
Gerardo Carpentieri, University of Naples Federico II, Italy  
Luigi dell'Olio, University of Cantabria, Spain  
Isidoro Fasolino, University of Salerno, Italy  
Romano Fistola, University of Sannio, Italy  
Carmela Gargiulo, University of Naples Federico II, Italy  
Thomas Hartmann, Utrecht University, Netherlands  
Markus Hesse, University of Luxemburg, Luxemburg  
Seda Kundak, Technical University of Istanbul, Turkey  
Rosa Anna La Rocca, University of Naples Federico II, Italy  
Houshmand Ebrahimpour Masoumi, Technical University of Berlin, Germany  
Giuseppe Mazzeo, National Research Council, Institute of Mediterranean studies, Italy  
Nicola Morelli, Aalborg University, Denmark  
Enrica Papa, University of Westminster, United Kingdom  
Dorina Pojani, University of Queensland, Australia  
Floriana Zucaro, University of Naples Federico II, Italy

#### **EDITORIAL STAFF**

Gennaro Angiello, Ph.D. at University of Naples Federico II, Italy  
Stefano Franco, Ph.D. student at Luiss University Rome, Italy  
Federica Gaglione, Ph.D. student at University of Naples Federico II, Italy  
Carmen Guida, Ph.D. student at University of Naples Federico II, Italy  
Rosa Morosini, Ph.D. student at University of Naples Federico II, Italy  
Andrea Tulisi, Ph.D. at Second University of Naples, Italy

# TeMA

Journal of  
Land Use, Mobility and Environment

THE TIMES THEY ARE A-CHANGIN'

2 (2019)

## Contents

**123** EDITORIAL PREFACE  
Corrado Zoppi

### FOCUS

**127** **Ecosystem services-based impact assessment for low carbon transition processes**  
A. Pilogallo, L. Saganeiti, F. Scorza, B. Murgante

**139** **Implementing the environmental dimension of the EU's urban agenda 2014-2020. The strategy for sustainable development in the medium-sized cities of Western Sicily**  
I. Vinci, F. Cutaia

### LAND USE, MOBILITY AND ENVIRONMENT

**147** **Mobility: exploratory analysis for territorial preferences**  
A.G.T. Santos, A.C.M. Moura

**157** **Sport and the city, between urban regeneration and sustainable development**  
M. Ladu, G. Balletto, G. Borruso

**165** **Land Suitability Assessment of Green Infrastructure Development**  
E. Ustaoglu, A.C. Aydinoglu

**179** **The prominent values of the Mustapha Pacha hospital of Algiers at different scales**  
N. Ghida, K. Boussora, C. Atzeni

**191** **Walkability and urban design in a post-earthquake city**  
D. Di Ludovico, P. Rizzi

**197** **REVIEW PAGES**  
Gennaro Angiello, Federica Gaglione, Carmen Guida,  
Rosa Morosini, Andrea Tulisi

# TeMA

Journal of  
Land Use, Mobility and Environment

TeMA 2 (2019) 179-188  
print ISSN 1970-9889, e- ISSN 1970-9870  
DOI: 110.6092/1970-9870/6127

review paper received 3rd June 2019, accepted 25th July 2019  
Licensed under the Creative Commons Attribution - 4.0 International License  
[www.tema.unina.it](http://www.tema.unina.it)

*How to cite item in APA format:*

Ghida, N., Boussora, K. & Atzeni, C. (2019). The prominent values of the Mustapha Pacha Hospital of Algiers at different scales. *Tema. Journal of Land Use, Mobility and Environment*, 12(2), 179-188. doi: <http://dx.doi.org/10.6092/1970-9870/6127>



## THE PROMINENT VALUES OF THE MUSTAPHA PACHA HOSPITAL OF ALGIERS AT DIFFERENT SCALES

Nassila Ghida<sup>a</sup>, Kenza Boussora<sup>b</sup>, Carlo Atzeni<sup>c</sup>

<sup>ab</sup> Ecole Polytechnique d'Architecture et d'Urbanisme -EPAU/  
e-mail: [n.ghida@epau-alger.edu.dz](mailto:n.ghida@epau-alger.edu.dz); [k.boussora@epau-alger.edu.dz](mailto:k.boussora@epau-alger.edu.dz)

<sup>c</sup> Dipartimento di ingegneria civile, ambientale e architettura (DICAAR)  
Università di Studi di Cagliari (UniCa)  
e-mail: [carlo.atzeni@unica.it](mailto:carlo.atzeni@unica.it)  
ORCID: <https://orcid.org/0000-0003-4751-5864>

### ABSTRACT

Mustapha Pacha healthcare facility is one of the most important structure of the sanitary history in Africa. Its stratification goes back to the 19th century. Both of its location in the urban heart of the capital of Algeria and its architectural composition are strategic characteristics of its longevity. But in 2015, some political will pointed out the necessity to demolished the entire hospital. A Utopia due to the complexity of the structure and to economic issues. The study aims to reveal the different heritage scale values of the hospital which characterize it as a preserved and as a functional hospital. Those values are part of the urbanity of the city, its architectural criteria and the medical history. Multi-scalar values are the urban value, the architectural value, the collective value, the scientific value, and the value of belonging. The results aim first to point out the importance of Mustapha Pacha healthcare facility as a building heritage due to its contribution to architectural, human, medical, surgical and technical development. Secondly, it exposes healthcare facilities possibility to be valorized and protected as a built heritage. It also has direct practical implications such as to be an academic base for future researches aiming to understand 20th century healthcare facilities organization and values in general and the Mustapha Pacha hospital as a specific architectural object. The regrouped information is also a deep data collection never done before in order to understand the hospital and can promote heritage' file submission proposition

### KEYWORDS:

Healthcare facility; Urbanity; Values; Sustainability

# TeMA

有关土地使用、交通和环境的杂志

TeMA 2 (2019) 179-188  
print ISSN 1970-9889, e- ISSN 1970-9870  
DOI: 110.6092/1970-9870/6127

review paper received 3rd June 2019, accepted 25th July 2019

Licensed under the Creative Commons Attribution - 4.0 International License  
www.tema.unina.it

How to cite item in APA format:

Ghida, N., Boussora, K. & Atzeni, C. (2019). The prominent values of the Mustapha Pacha Hospital of Algiers at different scales. *Tema. Journal of Land Use, Mobility and Environment*, 12(2), 179-188. doi: <http://dx.doi.org/10.6092/1970-9870/6127>



## 阿尔及尔穆斯塔法·帕查医院在不同尺度下的重要价值

Nassila Ghida<sup>a</sup>, Kenza Boussora<sup>b</sup>, Carlo Atzeni<sup>c</sup>

<sup>ab</sup> Ecole Polytechnique d'Architecture et d'Urbanisme -EPAU/  
e-mail: [n.ghida@epau-alger.edu.dz](mailto:n.ghida@epau-alger.edu.dz); [k.boussora@epau-alger.edu.dz](mailto:k.boussora@epau-alger.edu.dz)

<sup>c</sup> Dipartimento di ingegneria civile, ambientale e architettura (DICAAR)  
Università di Studi di Cagliari (UniCa)  
e-mail: [carlo.atzeni@unica.it](mailto:carlo.atzeni@unica.it)  
ORCID: <https://orcid.org/0000-0003-4751-5864>

### 摘要

穆斯塔法·帕查医疗保健机构是非洲卫生历史上最重要的组织之一。它的起源可以追溯到19世纪。该机构位于阿尔及利亚首都市中心的地理位置和建筑布局，都反映了其悠久的历史 and 重要的地位。但在2015年，一些政见提出有必要拆除整座医院。但由于结构方面的复杂性和经济问题，这一提议只成为了一个乌托邦。本研究的目的是揭示该院作为一家受保护机构和功能性机构，在这两方面所具有的不同文化遗产规模价值。这些价值是医院所在城市都市化、其建筑准则和医学历史的一部分。多标量的价值包括城市价值、建筑价值、集体价值、科学价值，以及归属感。研究结果的首要目的，是指出穆斯塔法·帕查医院作为一项建筑遗产，因其在建筑、人力、医疗、外科和技术发展方面所作出的贡献而具有的重要意义。其次，研究结果揭示了医疗卫生机构定位为建筑遗产而进行保护的可能性。研究还具有一些直接的实际影响。例如，为今后旨在了解20世纪的卫生医疗组织机构及价值一般情况、以及以穆斯塔法·帕查医院为具体建筑对象的研究提供了学术基础。此外，通过研究中对信息的重新整理，还提供了深入的数据，便于促进对该院的了解、并有利于遗产文件申请工作的开展。

### 关键词:

卫生机构; 都市化; 价值; 可持续发展

## 1 INTRODUCTION

Mustapha Pacha healthcare facility is one of the first built healthcare structure in Africa (Saouillet, 1955). It constitutes a rich sanitary history from the Ottoman period to the actual contemporary world, but till today, it has rarely been studied through architectural researches. Its architectural data is divided between the archives of Algeria and France and its building structure is fragmented between oral and written history. Its first available plan is dated on 1854 but testimonies of its creation dates of 1851 (Bodichon, 1851). It exposes the organization of the wards to receive the French injured military corps during the different wars (Saouillet, 1955). Its strategic implementation near the coast and in the Algiers' heart city center made it one of the most important sanitary structure till nowadays. But due to hospitals' life cycle in general and regarding the continuous development of influent factors (such as medical' technologies, industrial revolution, demographic growth and human' comfort assessment and appraisals) it requires more internal spaces and different spatial organizations (« Grandeur et décadence de l'hôpital Mustapha », s. d.; liberte-algerie.com, s. d.). Since the 70<sup>th</sup> the Algerian government worked on a national strategy for both qualitative and quantitative healthcare system that involves the planning of hospitals and the rehabilitation of the structures currently in existence. But due to both the huge surface of the country and to a lack of the inclusion of architectural perspective, in 2015, the ministry of health of Algeria has exposed the aim to build a new healthcare structure projection for the Mustapha Pacha hospital instead of its rehabilitation (« Le nouveau centre hospitalier universitaire d'Alger », s. d.; « University Hospital Center Alger », s. d.).

No information has been presented about the Mustapha Pacha ancient structure reuse or demolition but the main objective of the project was to offer users more humanized and adaptable spaces and till today, the project never began due to economic issues and to the dependent economic budget of hospitals (Kaddar, 1988; Mezouaghi, 2015). The controversial projection offered this research the opportunity to look forward to expose the Mustapha Pacha original values and potential as an ancient structure. Healthcare facilities are a specific architectural concern in practice and research (Ulrich, 2006). From the modern period to nowadays, architects' goal is to make them functional, humanized and concerned about future developments, regarding all their complex missions (Lankford et al., 2003). The role of the "*machine à guérir*" (Foucault et al., 1979) is to make children as comfortable as in their house and to make elder people as confident, relaxed and in contact with nature in order to keep them connected to the world and to feel part of it development and continuity (Inouye et al., 2000). Through multidisciplinary studies, it has been proved that the impact of a built healthcare structure on users is important (Rajendran, Gambatese, & Behm, 2009). Environmental components and evidence based design have to improve users' outcomes. The evaluation of space is fundamental to understand both users' need and how architects can improve it. Even the green building need to be evaluated in order to create continuous healing design. It is important to evaluate healthcare facilities from different periods and to evaluate users' satisfaction to see how much architecture contribute to the well-being of hospitalized persons, even if it is an ancient structure (Paul & Taylor, 2008).

It is commonly known that heritage is the common material or immaterial wealth of a group. In architecture, it regroups monuments, natural and urban sites. Palaces, theatre or houses are part of heritage but it is not really common to find healthcare facilities. The Art Deco San Pau hospital of Barcelona (Marsili, 2014) and the Otto Wagner Hospital of Vienna (« Heritage Alert: Otto-Wagner-Hospital, Steinhof, Vienna - International Council on Monuments and Sites », s. d.) are part of the UNESCO heritage list (Centre, s. d.) but both are facing difficult phases due to management issues. The Children's University Hospital of Niño Jesús 1879 which is part of the national monument list (de Rojas et al., 2004). Being part of the international or the national heritage list offer the possibility to valorize and optimize the interest regarding healthcare structures. Among the main elements of selection to protect a monument, the UNESCO exposes clear and organized criteria. Among those criteria, values play a major role. Francoise Choay (1992) expresses values through different scales. They can differ from a structure to another. She also expose the negative impact of "*patrimonialisation*"



that can damage the architecture through excessive exploitation as tourism (Choay, 1992). Protecting a structure can also limit its use under the heritage law (Zeroual, 1998) and that is why this study do not aim to make the Mustapha Pacha as an architectural inventory but to highlight its values in order to expose its importance and impact both the architectural and healthcare field.

## 2 METHODOLOGY

The overall method consists to analyze the historical, urban and architectural data collection of the hospital to understand its historical stratigraphy, its actual spatial organization and use under values which can be a basic research to promote the importance of the building (Choay, 1992) and its contribution to sanitary heritage at a local or an international scale.

The observation was also an important tool to understand some architectural facts. The values are exposed through argumentative findings under 5 main values: the urban value, the architectural value, the collective value, the cognitive value, the value of the place names and the belonging value. Those values are part of the contribution to the comprehension of the building and its protection under a sensorial rehabilitation and sustainability. For a long term impact, those values are contributors of the sustainability, the "*patrimonialisation*" (Di Méo, 2007) and the sensory rehabilitation of ancient healthcare facilities.

## 3 RESULTS

The data collection findings reveal a rich architectural stratification of the hospital. The available data exposes the development of the construction of Mustapha Pacha through more than 168 years. The first plan is from 1854 and shows how the hospital was partly a civic and a military structure at the same time (« Alger, ville & architecture 1830-1940 », s. d.). The regrouped historical data expose how architects, urbanists and scientists has contributed to the Mustapha Pacha healthcare development in Algeria.

The urban interaction between the hospital and the city of Algiers is fundamental and constitute one of the "*urbanity*" of Algiers (Picard, 1997). In fact, the surface of 14 hectares of the hospital is in the heart of the capital and forms an urban park for the neighborhood and a urban shortcut for daily urban use (Fig. 1) The double (internal and external) urbanity and the centrality of the structure offers the possibility to live the space freely but in a controlled way.

The findings expose 5 main important values for the hospital structured from the urban scale to the architectural scale and from the immaterial value to the material value. Each value exposes the impact of the construction to develop healthcare and healthcare design.

### 3.1 THE URBAN VALUE

Mustapha Pacha implantation is located in the heart of the first extension of the urbanism of Algiers. It is part of the main central districts of the city and is integrated to the daily urban life. As far as the hospital exists its urbanity is part of the urbanity city of Algiers. The complex is in the heart of three main districts of Algiers: The Champs de Manoeuvre of Algiers, The Hassiba Benbouali main district and the Messonier district. The different accessibility points offer the fluidity of the city through the hospital. In fact, connections are direct through the hospital' internal road structures and offers the inhabitant of Algiers to use the internal roads of the hospital as shortcuts to have direct access to the lower or the higher point of the city. The connectivity of the hospital to the city urban word offers the possibility to create direct relations and to promote the central garden of the hospital as an opportunity for the neighborhood' citizens to interact inside the hospital and for the users of the hospital to interact with external people. Offering social possibility exchange inside a healthcare facility is a positive strategy for positive outcomes (Douglas & Douglas, 2004).

The findings expose 5 main important values for the hospital structured from the urban scale to the architectural scale and from the immaterial value to the material value. Each value exposes the impact of the construction to develop healthcare and healthcare design.

### 3.1 THE URBAN VALUE

Mustapha Pacha implantation is located in the heart of the first extension of the urbanism of Algiers. It is part of the main central districts of the city and is integrated to the daily urban life. As far as the hospital exists its urbanity is part of the urbanity city of Algiers. The complex is in the heart of three main districts of Algiers: The Champs de Manoeuvre of Algiers, The Hassiba Benbouali main district and the Messonier district. The different accessibility points offer the fluidity of the city through the hospital. In fact, connections are direct through the hospital' internal road structures and offers the inhabitant of Algiers to use the internal roads of the hospital as shortcuts to have direct access to the lower or the higher point of the city. The connectivity of the hospital to the city urban word offers the possibility to create direct relations and to promote the central garden of the hospital as an opportunity for the neighborhood' citizens to interact inside the hospital and for the users of the hospital to interact with external people. Offering social possibility exchange inside a healthcare facility is a positive strategy for positive outcomes (Douglas & Douglas, 2004).



Fig. 1 The internal and the external urbanity of the Mustapha Pacha hospital

### 3.2 THE ARCHITECTURAL VALUE

The history of the hospital construction is a testimony of the stratification of important architect of the two different centuries as GuiAuchain Jules Voinot or Xavier Salvador (Aiche, 2003) through different periods (Fig. 2). Besides the different period of the hospital building we can observe an open book exposing architecture from the 19th till the 21th century (Fig. 2).



Fig. 2 The evolution of the Mustapha Pacha hospital through centuries

Architecture values can be evaluated at different levels from macro to micro. From the plan organization to the unit interaction with the external spaces. From a macro observation, each building has a specific composition of wards. The external spaces of transition composed of roads and greenery spaces form indirectly spaces of meetings and relaxation. The ward' composition and its complexity offers the services an adaptable space to receive inpatients even if the increasing number of population makes space use satisfaction sometimes impossible. Beside the matter of management, the structures are aging rapidly than expected. The architecture of wards is planned to answer user's needs of the 21th century but with a less number and more strategic management. The architectural details and technical elements composing the space are one of the most performing during the 1950 (Chantiers, 1950).

The Medical Infantile Unit build in 1883 than in 1948 (considered as the first children hospitals in Africa) is a major testimonial of space organization and internal interaction through its central elevator for daily management and function use. The spaces are all connected vertically and horizontally by physical connections: the elevator is the main important first vertical connection as stairs and a central hoist load which insure and coordinate the eaten service in the hospital. The Children chirurgial service during the 1950 has one of the most developed technologies to insure child security and well-being inside the service. It also offers pathways' distinction of users in a hospital which is an important layout management preoccupation in healthcare facilities (Hanne, Melo, & Nickel, 2009).



Fig. 3 The medical infantile unit in 1955 and in 2018

### 3.3 THE COLLECTIVE VALUE

The Algerian communities cannot divide the city of Algiers from the hospital Mustapha Pacha regarding its national scale impact, its influence and its importance. It is part of the society references of the medical field in Algeria. Medical students come from all the cities in order to try to be formed in this prestigious university hospital center (Boufenara & Labii, 2009). Besides, inpatients come from all over the country to look for a bed inside the hospital as a reference in medical treatment and fellowship.

### 3.4 THE SCIENTIFIC VALUE

The hospital has formed since 1854 the first Algerian modern doctors, surgeons and scientists of different fields such as pharmaceutical or biological researchers. It is considered to be one of the most renowned hospitals for medical, surgical and paramedical training in Algeria centuries after. The hospital has also a national users' impact. The Mustapha Pasha hospital is the only medical school during the French colonial period that opened in 1854. The greatest researchers of the 20th century have been formed inside its walls and inside the main amphitheater.

The botanist Jules Aimé Battandier who documents the Algerian flora by his research publications. Jean Baptiste Paulin Trolard major figure in the history of anatomy and medicine has been formed in the heart of the hospital Mustapha in 1856 and later he found the first institute of pharmaceutical research Pasteur. Jean Marie Trolard, offer to the science after his graduation from the hospital contribute by his research on anatomy: "*la veine cérébrale anastomotique supérieure ou veine de Trolard*" (Stam, 2005), "*le ligament costo-lamellaire de Trolard*", The « *loi de Trolard* » (Bussièrè, 1895) and « *les chevrons de Trolard* ». He contributed also by his botanical knowledge by publishing on Algeria' forest.

Even during the Algerian resistance (from 1954-1962) the hospital formed doctors who believed in the independence of Algeria and contributed for its freedom such as Pierre CHAULET (Pablos-Méndez et al., 1998).

### 3.5 THE VALUE OF BELONGING (LA VALEUR D'APPARTENANCE)

The Name of the hospital is part of the history of the urban site and of the history of Algeria. Mustapha Pacha was an ottoman leader who marked the history of the country. The location of the hospital is one of the Mustapha Pacha' gardens. Located in a green area it was not the best place to implant a hospital after the donation of these 14 hectares of lands.

The greenery aspect of the hospital is an evidence but offering the lower part of the garden is a strategic choice rather than a sanitary one: The purpose was to be the closest to the sea to transport soldiers quickly. The hygienic aspect of the hospital was not an evidence till the development of the construction materials and the hygienic medical movement (Bodichon, 1851). The variety and the green space is an opportunity to explore and connect the indoor spaces with the outdoor protected spaces of the hospital.

## 4 DISCUSSION

The results have a direct impact in practice. The values of the hospitals offer an urban and an architectural lecture of space at macro scales only but with deeper exploration more values will be exposed. Exploring the different tangible and intangible values characterizing the hospital and its singularity in order to expose its strategic role in the city and for architecture is an innovative approach to express how valuable the modern hospital architecture principles are in Algeria.

It is also an opportunity to point out a field that is not explored in Algeria by architects. Healthcare structures is a hard design that need multiple reflections and projections. The Rehabilitation Center "Groot Klimmendaal" in the Netherlands for example, took more than 9 years of projections before its construction but offers multiple evidence based design concepts and a humanized architecture. The method of this study is composed of two



major steps: historical data collection about the building to understand its composition and evolution and to understand its history never studied before. Those values offer some design' tracks of the Mustapha Pacha:

- the urbanity of the hospital is a matter of social interaction;
- the layout and planning organization is a hygienic and a safety matter;
- the greenery implantation offers psychological healing and a regeneration opportunity for the users of the hospital;
- almost two centuries of healthcare material and immaterial values needs to be valorized and promoted to maintain motivational medical development and to think about architectural reuse of space and rehabilitation in a sustainable way;
- healthcare architecture is a complex field that needs to assure multidisciplinary functions in the same bubble: housing, working, discovering, teaching, treating, operating, training, forming, discussing, maintaining, interacting and healing. A small city with multi-criteria of functional and emotional human' state;
- architects have to think about ancient structure reuse in order to insure a sufficient development and environmental protection.

## 5 CONCLUSION

The objective of this paper is the promotion of the healthcare structure as a discipline of specialized architecture in Algeria. It aims also to point out the necessity to think about the rehabilitation of the ancient structures following sensorial and evidence based design strategies. The planet cannot handle more consumption of natural spaces and energies. Architects need to think about the reuse of ancient structures of the 19th century and to regenerate the space through humanized design. The study offers practical use for NGOs defending the heritage field in Algeria a basic of academic knowledge regarding Mustapha Pacha values. This study can promote a submission folder for a "*patrimonialisation*" or building protection demands. It also offers the academic field original historical document and architectural data. The values exposed are not the definitive values for the Mustapha Pacha or another healthcare facility. The context of the building, its history and its use are the main elements which can offer perspective of defining ancient building values. Those are only the results of an investigation of 4 years of data collection and maybe more data could be found in France (Regarding the archive problematic of Algeria divided between the countries).

## REFERENCES

- Aiche, B. (2003). Modern architecture in Algiers. *Docomomo Journal*, (28).
- Alger, ville & architecture 1830-1940. (s. d.). Consulté 22 février 2019, à l'adresse <http://www.editions-barzakh.com/catalogue/alger-ville-architecture-1830-1940>
- Bodichon, E. (1851). *Hygiène à suivre en Algérie. Acclimatement des Européens*.
- Boufenara, K., & Labii, B. (2009). LES MILITAIRES FRANÇAIS ET LA DYNAMIQUE DE LA STRUCTURE SANITAIRE EN ALGÉRIE DURANT LA PÉRIODE COLONIALE. *Sciences & Technologie. D, Sciences de la terre*, (30), 9-18.
- Bussièrre, J. J. A. (1895). La loi de Trolard: recherches anatomiques et physiologiques [sic] sur les rapports des artères de l'encéphale avec les sinus qu'elles traversent.
- Centre, U. W. H. (s. d.). Palau de la Música Catalana and Hospital de Sant Pau, Barcelona. Consulté 22 février 2019, à l'adresse <http://whc.unesco.org/en/list/804/>
- Chantiers. (1950). La clinique médicale infantile à l'hôpital de Mustapha à Alger.
- Choay, F. (1992). *L'allégorie du patrimoine* (Vol. 271). Seuil Paris.

de Rojas, M. S., Azorín, V., Frias, M., Rivera, J., García, N., Martín-Estarlich, A., & Saiz-Jimenez, C. (2004). Weathering, cleaning and conservation of the brick façade on the "Niño Jesus" Hospital in Madrid. *Air Pollution and Cultural Heritage*, 233.

Di Méo, G. (2007). Processus de patrimonialisation et construction des territoires. In *Colloque " Patrimoine et industrie en Poitou-Charentes: connaître pour valoriser"* (p. 87-109). Geste éditions.

Douglas, C. H., & Douglas, M. R. (2004). Patient-friendly hospital environments: exploring the patients' perspective. *Health expectations*, 7(1), 61-73.

Foucault, M., Barret-Kriegel, B., Thalamy, A., Beguin, F., & Fortier, B. (1979). *Les machines à guérir: aux origines de l'hôpital moderne*. Pierre Mardaga Bruxelles.

Grandeur et décadence de l'hôpital Mustapha. (s. d.). Consulté 22 février 2019, à l'adresse <http://www.santemaghreb.com/algerie/abid0513.htm>

Hanne, T., Melo, T., & Nickel, S. (2009). Bringing robustness to patient flow management through optimized patient transports in hospitals. *Interfaces*, 39(3), 241-255.

Heritage Alert: Otto-Wagner-Hospital, Steinhof, Vienna - International Council on Monuments and Sites. (s. d.). Consulté 22 février 2019, à l'adresse <https://www.icomos.org/en/get-involved/inform-us/heritage-alert/current-alerts/5453-icomos-heritage-alert-otto-wagner-hospital-steinhof-vienna>

Inouye, S. K., Bogardus, J. S., Baker, D. I., Leo-Summers, L., & Cooney, J. L. (2000). The Hospital Elder Life Program: a model of care to prevent cognitive and functional decline in older hospitalized patients. Hospital Elder Life Program. *Journal of the American Geriatrics Society*, 48(12), 1697-1706.

Kaddar, M. (1988). Financement et gestion des secteurs sanitaires en Algérie. *les cahiers du CREAD*, (13), 41-59.

Lankford, M. G., Zembower, T. R., Trick, W. E., Hacek, D. M., Noskin, G. A., & Peterson, L. R. (2003). Influence of role models and hospital design on the hand hygiene of health-care workers. *Emerging infectious diseases*, 9(2), 217.

Le nouveau centre hospitalier universitaire d'Alger. (s. d.). Consulté 22 février 2019, à l'adresse <http://prescriptor.info/site/2558/le-nouveau-centre-hospitalier-universitaire-d-alger>

liberte-algerie.com. (s. d.). Ces hôpitaux qui menacent ruine: Toute l'actualité sur liberte-algerie.com. Consulté 22 février 2019, à l'adresse <https://www.liberte-algerie.com/dossier/ces-hopitaux-qui-menacent-ruine-223723>

MARSILI, E. (2014). L'evoluzione del turismo a Barcellona: dal turismo d'affari ai nuovi turismi urbani.

Mezouaghi, M. (2015). L'économie algérienne: chronique d'une crise permanente. *Politique étrangère*, (3), 17-29.

ONS : Office National des Statistiques. (s. d.). Consulté 22 février 2019, à l'adresse <http://www.ons.dz/-Sante-2003-.html>

Pablos-Méndez, A., Raviglione, M. C., Laszlo, A., Binkin, N., Rieder, H. L., Bustreo, F., ... Chaulet, P. (1998). Global surveillance for antituberculosis-drug resistance, 1994-1997. *New England Journal of Medicine*, 338(23), 1641-1649.

Paul, W. L., & Taylor, P. A. (2008). A comparison of occupant comfort and satisfaction between a green building and a conventional building. *Building and Environment*, 43(11), 1858-1870.

PICARD, A. (1997). Des villes françaises en Algérie: 1830-1870.

Rajendran, S., Gambatese, J. A., & Behm, M. G. (2009). Impact of green building design and construction on worker safety and health. *Journal of construction engineering and management*, 135(10), 1058-1066.

Saouillet. (1955, Printemps). L'hôpital civil Alger un grand établissement voué au soulagement de la souffrance. Consulté à l'adresse [http://alger-roi.fr/Alger/hopital\\_mustapha/textes/1\\_hopital\\_algeria\\_41.htm](http://alger-roi.fr/Alger/hopital_mustapha/textes/1_hopital_algeria_41.htm)

Stam, J. (2005). Thrombosis of the cerebral veins and sinuses. *New England Journal of Medicine*, 352(17), 1791-1798.

Ulrich, R. S. (2006). Essay: Evidence-based health-care architecture. *The Lancet*, 368, S38-S39.

University Hospital Center Alger. (s. d.). Consulté 22 février 2019, à l'adresse <https://www.mcarchitects.it/project/university-hospital-center-alger>

Zeroual, L. (1998). de l'article/du chapitre Loi n 98-04 du 15 juin 1998 relative à la protection du patrimoine culturel.

## AUTHOR'S PROFILE

**Nassila Ghida** is a 26 years old architect and a PhD candidate under a cotutelle agreement between the Laboratoire Ville Architecture et Patrimoine (LVAP) de Ecole Polytechnique d'Architecture et d'Urbanisme EPAU of Algiers and the Dipartimento di Ingegneria Civile, Ambientale e Architettura (DICAAR) of the University Degli Studi Di Cagliari- UniCa of

Cagliari, Italy supported by the MAECI. Her thesis research focuses on the rehabilitation of ancient children' hospitals of the 20th century sensorial rehabilitation through spatial evaluation.

**Kenza Boussora** is an architect and associate professor at Ecole Polytechnique d'Architecture et d'Urbanisme, EPAU, Algeria. She received her degree in Architectural Studies from EPAU, and completed her post-graduate studies at both Oxford Brookes University, UK, and Mohamed Khider University, Biskra, Algeria. She has taught Islamic architectural history for many years, with a particular focus on the North African countries. Her research interests focus on architectural morphology and the relationship between architecture, mathematics and neurosciences. She conducted many research on Islamic architecture, regionalism and colonial architecture in North Africa. She is also a Corresponding Editor of the Nexus Network Journal.

**Carlo Atzeni** is a civil engineer. He is a Ph.D. researcher in Building Engineering and Associate Professor in Technical Architecture at the Faculty of Engineering and Architecture of Cagliari he is the coordinator of the Degree Course in Science of Architecture and professor of Integrated Laboratory of Design and Construction of Architecture 3. His fields of study and research are: rehabilitation and recovery of traditional and historical Architecture, new forms of habitat in rural landscapes and colonial modern architecture. His research activity applied to project-making has been awarded several prizes and special mentions in national and international architecture competitions