

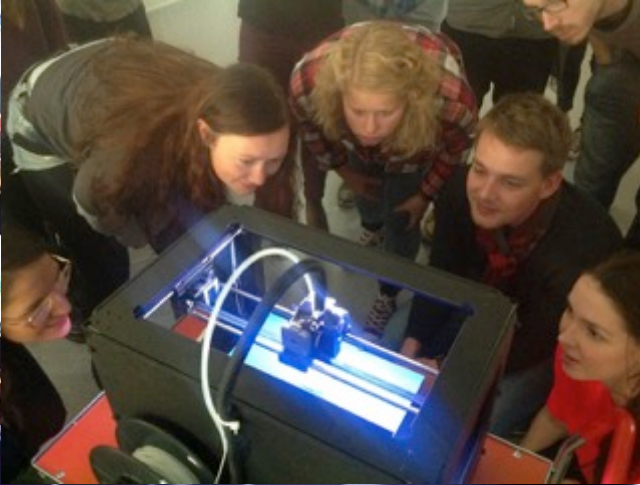
Virtual Reality as a tool for reconstruction and documentation of cultural heritage sites and historically important landscapes in Palestine.

Ramzi Hassan ramzi.hassan@nmbu.no



Department of Landscape Architecture
& Spatial Planning (ILP) www.nmbu.no/ILP
Virtual Reality Lab (VR-Lab) www.nmbu.no/vrlab





Research and education

Demonstration theater for the public

Environmental simulation studies

Digital documentation and historical reconstructions

Public participation

Testing of new technologies



Historisk hage åpnet på Stend

Morten Nordahl Ellingsen

Fra 1680 lå en av Vestlandets mest herskabeligste hager på Stend utenfor Bergen. I 1861 var den blitt for dyr å holde og ble fjernet. Med hjelp fra NMBUs historiske landskapskompetanse har fylkeskommunen nå gjenkapt den imponerende hagen.



«Gå mann, så flott!!!» Endelig kan bergensere oppleve ekte hagekunst på Stend igjen.
Foto: Karsten Jørgensen (NMBU)

«Jordbruksskolen» på Stend og området rundt er en ekte bergensk institusjon som bergensere i alle aldre har et forhold til. I forbindelse med skolens 150-årsjubileum har Hordaland fylkeskommune fått rekonstruert en hage som spiller på den flotte historiske hagen på området.

Stend gård har røtter helt tilbake til forhistorisk tid, og hagen ble anlagt i 1680-årene, og ble viden kjent for sin prakt med både fiskedam, kanaler og lysthus. Denne hagen var «nåkke for seg sjøl».

For dyr å holde

Dessverre ble hageanlegget for kostbart å holde, så hagen ble ryddet bort da fylkeskommunen overtok i 1861. Området ble da brukt som beitemark, plen og planteskole.

I 2010 bestemte fylkeskommunen å gjenskape den historiske hagen på Stend for å formidle et godt eksempel på Bergensregionens hagekunst fra 1700- og 1800-tallet. Og i slutten av september kunne den flotte historiske hagen på Stend endelig åpnes.



Reconstruction of the historic garden of Stend, Bergen.

The visual landscape and cultural heritage sites in Palestine are important for reasons of cultural identity, environmental integrity and economic development.



Mountainous landscape of Nablus. Photo: Ramzi Hassan



Mountainous landscape of Nablus. Photo: Ramzi Hassan

During recent decades, changes in the landscape of Palestine have occurred rapidly and very dramatically.



Separation wall. Photo: Documenting Palestine in Photographs © Gary Fields.

Challenges facing historical sites in Palestine

- 1- The impact of the on-going construction of the separation wall between Palestinian Territories and Israel, bypass roads and new settlements on the historical landscapes and historical sites.
- 2- The destruction of the sites through deterioration, erosion, heavy vegetation, architectural collapse, as well as damage due to animals and human plundering.
- 3- Illicit excavations of archaeological sites as a source of income.
- 4- Urban expansion and building activities that gradually threaten major sites.
- 5- The absence of strategies for the preservation, conservation and protection of historical sites. Challenges.
- 6- The age of the existing laws, which are very old, primarily depend on the British Mandate legislations and do not protect the entire set of cultural heritage components.
- 7- The lack of financial resources, of appropriate capacity building, community awareness and of a comprehensive database for all cultural heritage components all over Palestine.

During recent decades, changes in the landscape of Palestine have occurred rapidly and very dramatically.



Abu Ghnaim area, Bethlehem district. Photo: Courtesy of ARIJ.

Challenges facing historical sites in Palestine

- 1- The impact of the on-going construction of the separation wall between Palestinian Territories and Israel, bypass roads and new settlements on the historical landscapes and historical sites.
- 2- The destruction of the sites through deterioration, erosion, heavy vegetation, architectural collapse, as well as damage due to animals and human plundering.
- 3- Illicit excavations of archaeological sites as a source of income.
- 4- Urban expansion and building activities that gradually threaten major sites.
- 5- The absence of strategies for the preservation, conservation and protection of historical sites. Challenges.
- 6- The age of the existing laws, which are very old, primarily depend on the British Mandate legislations and do not protect the entire set of cultural heritage components.
- 7- The lack of financial resources, of appropriate capacity building, community awareness and of a comprehensive database for all cultural heritage components all over Palestine.

During recent decades, changes in the landscape of Palestine have occurred rapidly and very dramatically.



Historical sites in Palestine. Nablus. Photo, Ramzi Hassan

Challenges facing historical sites in Palestine

1- The impact of the on-going construction of the separation wall between Palestinian Territories and Israel, bypass roads and new settlements on the historical landscapes and historical sites.

1- The destruction of the sites through deterioration, erosion, heavy vegetation, architectural collapse, as well as damage due to animals and human plundering.

2- Illicit excavations of archaeological sites as a source of income.

3- Urban expansion and building activities that gradually threaten major sites.

5- The absence of strategies for the preservation, conservation and protection of historical sites. Challenges.

6- The age of the existing laws, which are very old, primarily depend on the British Mandate legislations and do not protect the entire set of cultural heritage components.

7- The lack of financial resources, of appropriate capacity building, community awareness and of a comprehensive database for all cultural heritage components all over Palestine.

During recent decades, changes in the landscape of Palestine have occurred rapidly and very dramatically.



Historical sites in Palestine. Nablus. Photo, Ramzi Hassan

Challenges facing historical sites in Palestine

- 1- The impact of the on-going construction of the separation wall between Palestinian Territories and Israel, bypass roads and new settlements on the historical landscapes and historical sites.
- 2- The destruction of the sites through deterioration, erosion, heavy vegetation, architectural collapse, as well as damage due to animals and human plundering.
- 3- Illicit excavations of archaeological sites as a source of income.
- 4- Urban expansion and building activities that gradually threaten major sites.
- 5- The absence of strategies for the preservation, conservation and protection of historical sites. Challenges.
- 6- The age of the existing laws, which are very old, primarily depend on the British Mandate legislations and do not protect the entire set of cultural heritage components.
- 7- The lack of financial resources, of appropriate capacity building, community awareness and of a comprehensive database for all cultural heritage components all over Palestine.

During recent decades, changes in the landscape of Palestine have occurred rapidly and very dramatically.



Historical sites in Palestine.

Challenges facing historical sites in Palestine

- 1- The impact of the on-going construction of the separation wall between Palestinian Territories and Israel, bypass roads and new settlements on the historical landscapes and historical sites.
- 2- The destruction of the sites through deterioration, erosion, heavy vegetation, architectural collapse, as well as damage due to animals and human plundering.
- 3- Illicit excavations of archaeological sites as a source of income.
- 4- Urban expansion and building activities that gradually threaten major sites.
- 5- The absence of strategies for the preservation, conservation and protection of historical sites.
- 6- The age of the existing laws, which are very old, primarily depend on the British Mandate legislations and do not protect the entire set of cultural heritage components.
- 7- The lack of community awareness, and a comprehensive database for all cultural heritage components all over Palestine.



The cultural heritage sites disappears at a rate higher than we are able, not only, to restore but also to document: human and natural factors, demolitions put in danger the collective heritage of the nation.

Since 1995, the Palestinian national authorities have promoted the protection of historical sites as a national objective, but failed to make them a priority.

The political situation in Palestine is stagnating, which prevents implementation of long-term strategies connected to preservation or documentation of valuable historical sites.

Ironically, the struggle in Palestine is all about the land, but resources and strategies to deal with and protect historically important landscapes and cultural heritage sites are lacking.

Historical sites in Palestine. photo, Ramzi Hassan



The absence of mechanism to convey the importance of historical places and landscapes causes the formation of new generations of citizens who don't associate meaning or value to historical places.

It is necessary to change the mentality towards archaeological, cultural monuments and historical landscapes as a common good. The monuments of the past not only carry a powerful spiritual potential but also promote the development of the tourist infrastructure, which potentially ensures an additional inflow of economic resources into the country.

With no prospect for a political solution on the ground, new, creative, and out-of-the-box thinking is required

Historical sites in Palestine. photo, Ramzi Hassan

UNESCO names Battir landscape as a protected World Heritage Site



- For the Press
 - Press releases
 - Media advisories
 - Interviews
- Multimedia
 - News Videos
 - Photos
 - Film and radio collection
- About us
 - Media contacts
 - What we do

20.06.2014 - UNESCOPRESS
Palestine: Land of Olives and Vines - Cultural Landscape of Southern Jerusalem, Battir, inscribed on World Heritage List and on List of World Heritage in Danger



© Jasmine Salachas/Centre for Cultural Heritage Preservation/Land of olives and vines - Cultural Landscape of Southern Jerusalem (Palestine)

The World Heritage Committee today began the examination of 36 sites nominated for inclusion on the World Heritage List. The first property discussed was Palestine: Land of olives and vines, Cultural Landscape of Southern Jerusalem, Battir, submitted by Palestine as an emergency nomination.

The Committee approved the inscription of the site on the World Heritage List. It also inscribed the property on the List of World Heritage in Danger after finding that the landscape had become vulnerable under the impact of socio-cultural and geo-political transformations that could bring irreversible damage to its authenticity and integrity, citing the start of construction of a separation wall that may isolate farmers from fields they have cultivated for centuries.

Palestine: Land of Olives and Vines - Cultural Landscape of Southern Jerusalem, Battir. is located a few kilometres south-west of Jerusalem, in the Central Highlands between Nablus and Hebron. The Battir hill landscape comprises a series of farmed valleys, known as wadian, with characteristic stone terraces, some of which are irrigated for market garden production, while others are dry and planted with grape vines and olive trees. The development of terrace farming in such a mountainous region is supported by a network of irrigation channels fed by underground sources. A traditional system of distribution is then used to share the water collected through this network between families from the nearby village of Battir.

The 38th session of the World Heritage Committee began on 15 June and will continue through to 25 June, under the Chair of Sheikha Al Mayassa Bint Hamad Bin Khalifa Al Thani.

The work of the session can be followed daily via webcast.



Cultural landscape of Battir, south of Jerusalem. Photo: UNESCO World Heritage Centre



Summers courses on digital documentation at Birzeit University, Palestine. photo, Ramzi Hassan



Summers courses on digital documentation at Birzeit University, Palestine. photo, Ramzi Hassan



Hisham palace site. photo, Ramzi Hassan

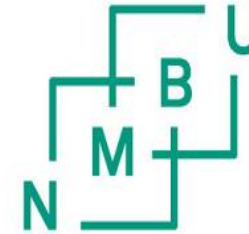


Hisham palace site. photo, Ramzi Hassan



The archaeological excavations carried out identified the ruins as a palatial complex built during the Umayyad period in the first half of the eighth century A.D.

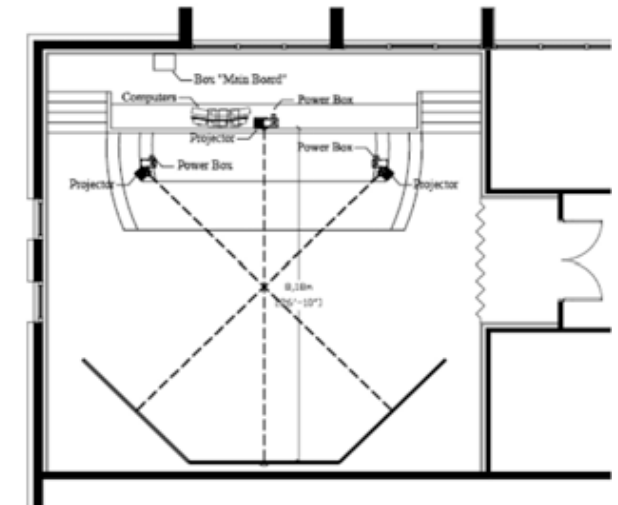
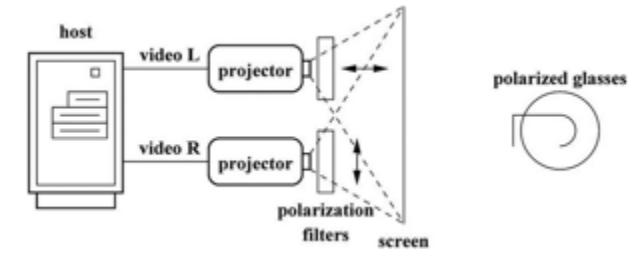
Hisham palace site. photo, Hamad Salem

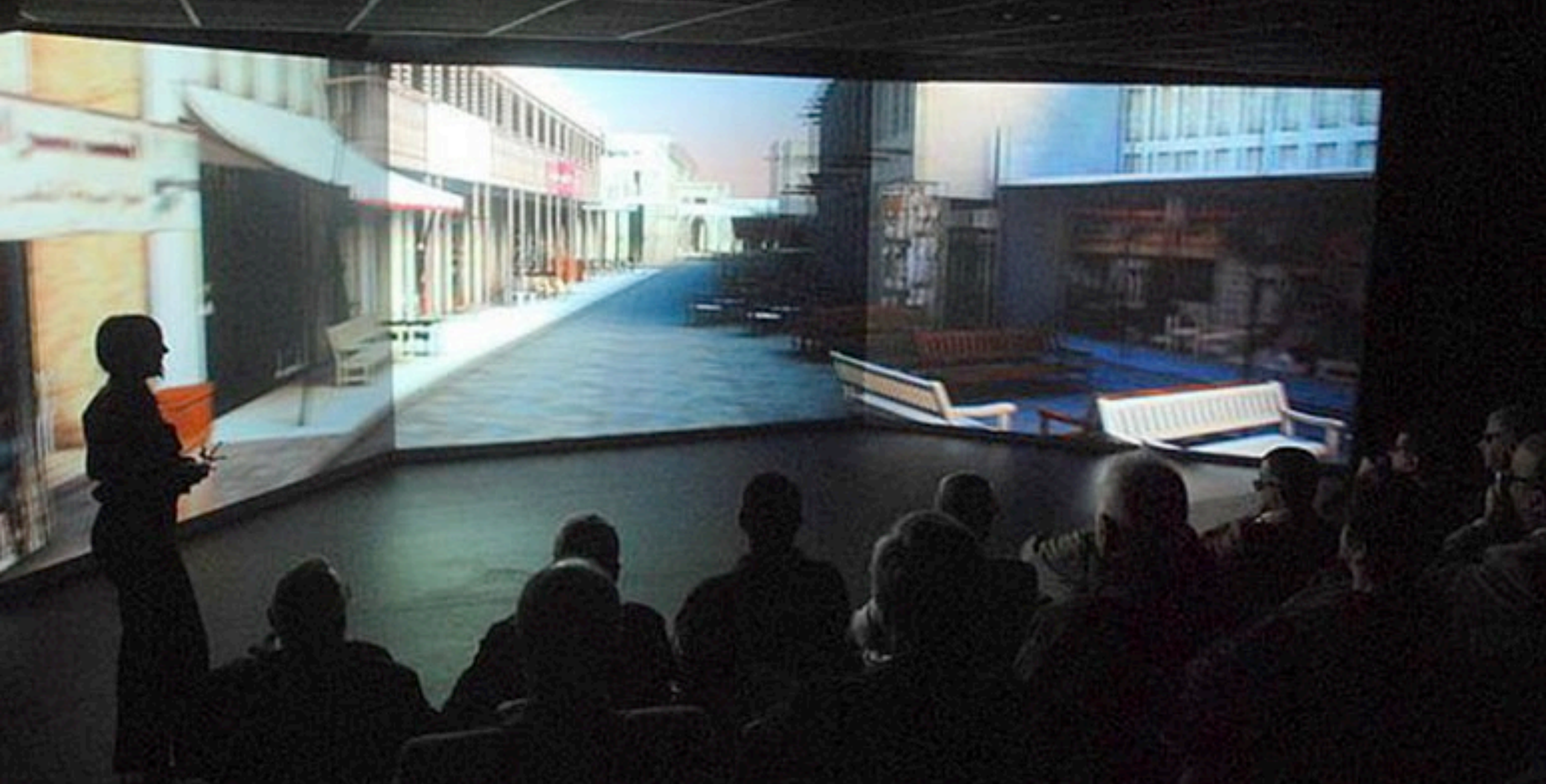


Virtual Reality technology for preservation and documentation of cultural heritage sites and historically important landscapes in Palestine.

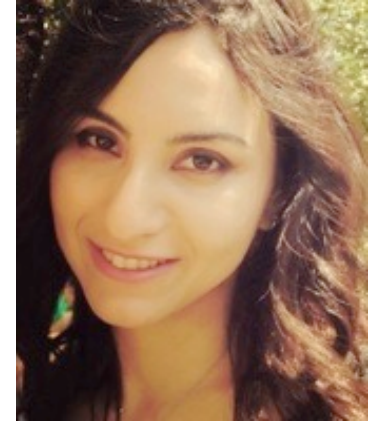


Virtual Reality Lab at Birzeit university. photo, Ramzi Hassan





Virtual Reality Lab at Birzeit university. photo, Ramzi Hassan



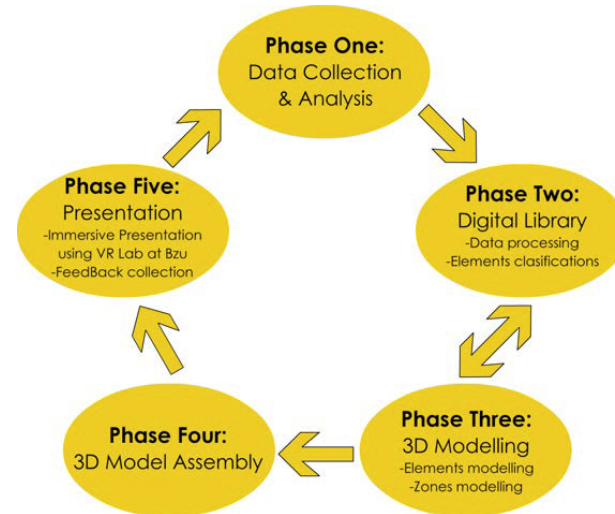
Ramzi HASSAN^{1, a)}, Shadi GHADBAN^{2, b)}, Omar ABOUDI^{2, c)}, Yousif KHATEEB^{2, d)}, Hamed SALEM^{3, e)} and Nour SHARKASI^{4, f)}

¹ Department of Landscape Architecture and Spatial Planning, Norwegian University of Life Sciences (NMBU). ² Department of Architectural Engineering, ³ Department of History and Archaeology, ⁴ Faculty of Engineering, Birzeit University – Palestine. ^{a)} : ramzi.hassan@nmbu.no. ^{b)} sghadban@birzeit.edu ^{c)} oaboudi@birzeit.edu ^{d)} yalkhatib@birzeit.edu ^{e)} hsalem@birzeit.edu ^{f)} nsharkasi@birzeit.edu.



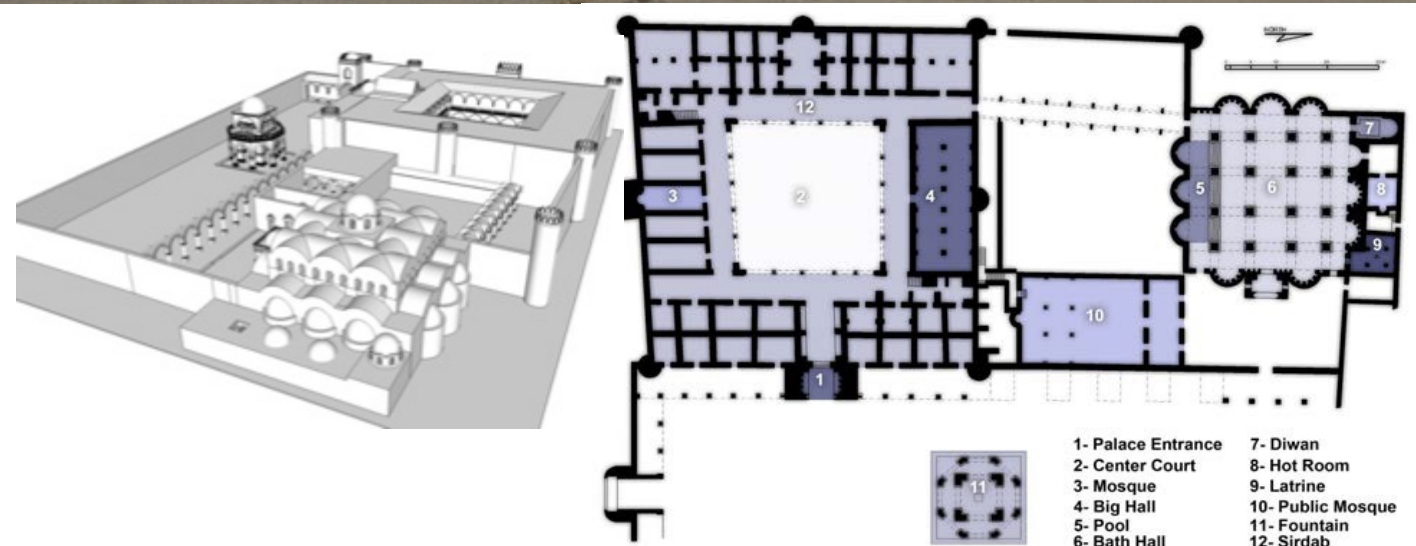
A team of historians, architects, planners, archeologist and 3D modelers were engaged to work in this project.

The reconstruction and modeling process went through a set of stages: data collection, site analysis, creation of a 3D digital library of project components, 3D modeling of the site, model assembly.



Edges 207800
Faces 128211 File Size 2.1MB







Hisham palace digital reconstruction, photo, Ramzi Hassan

List of publications

- *R. Hassan, H. Salem, The Development of VR Cultural Heritage Model from Jericho, Palestine. Proceedings for DMACH 2008 conference: Digital Media and its Application in Cultural Heritage\Edited by Jamal Al Qawasmi, Michele A. Chiuni, Sabry El-Hakim. Amman. (P 237–251). ISBN number: 978-9957-8602-5-7.*
- *N. Sharkasi, R. Hassan and C. M. Hagerhall, Presence in Virtual Cave; Investigating presence in VRCAVE environment for historical sites. N ASCAAD 2010 conference. Fez-Morocco, October 2010.*
- *S. Ghadban, R. Hassan, O. Aboudi, and Y. Khateeb, Development of an Interactive Virtual Environment for Hisham Palace in Jericho, Palestinian Territories. Archnet-IJAR, International Journal of Architectural Research. July 2013.*
- *K. Jørgensen, R. Hassan, Capacity Building in Landscape Architecture in Palestine. Environmental Policy and Landscape Architecture. CGL Centre of Garden Art and Landscape Architecture 2014.*
- *R. Hassan, S. Ghadban, O. Aboudi, Y. Khateeb, H. Salem, N. Sharkasi, 3D technology as a collaborative and multidisciplinary communication tool for studying historically important sites. The case of Jericho / Palestine. International congress on landscape ecology 2014.*

Reflections

- Virtual Reality technology was used in this project as experimental tool to investigate processes and potentials to study, document and communicate information on historically important sites in Palestine.
- Because of missing strategies and resources dealing with historical sites in Palestine, Virtual Reality for cultural heritage sites could become a medium for preservation, documentation, interpretation and intervention, education, tourism and raising the public awareness regarding the significant value of the local heritage.
- The VR presentation sessions provoked discussions connected to the right interpretation and demonstrated that the method has the potentials to be used as a collaborative visual tool for communication among various disciplines. The discussions evolved were very useful for defining future steps for development of the VR model for Hisham Palace case.
- This experiment represents a pioneering case in Palestine and the outcome of this project will inspire others to use Virtual Reality as a tool to study other historical sites. Also, in conflict regions like Palestine, there should be potentials to use VR in presenting and communicating the past and so providing the public with models reflecting the dominant ideologies and cultural heritage.

Inspire others!

Publications of the Tell Balata Archaeological Park Project
Eds Hamdan Taha and Gerrit van der Kooij



Tell Balata Archaeological Park Guidebook

Ministry of Tourism and Antiquities – Department of Antiquities and Cultural Heritage
Ramallah, 2014



Kingdom of the Netherlands



United Nations
Cultural Organization

With the support of
Ramallah
Office



Universiteit Leiden



Tell Balata, Nablus. photo, Ramzi Hassan

On going work #1

Empirical research investigating and measuring the local community acceptance and to determine whether VR technology could really make a difference in elevating public awareness towards cultural heritage sites.



VR investigations, VR-Lab at Birrzeit University. photo, Ramzi Hassan

On going work #1

Empirical research investigating and measuring the local community acceptance and to determine whether VR technology could really make a difference in elevating public awareness towards cultural heritage sites.

Questionnaire: Part #1

Man
 Women
 Age: 21

1. Could you name the site that was presented: Oslo historien
 2. Where is the site located: Sericho
 3. Have you been ever been at the site before: Yes No

Please read the questions carefully and give your answer by making a cross under the alternative that best matches your opinion.

	Fully Disagree	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Fully Agree
1 After the presentation, I was able to understand the site location.						<input checked="" type="checkbox"/>	
2 After the presentation, I was able to understand the configuration and relationship of spaces, rooms and voids					<input checked="" type="checkbox"/>		
3 After the presentation, I was able to identify the various functions connected to spaces at the palace.						<input checked="" type="checkbox"/>	
4 After the presentation, I feel I have enough information to enable me to formulate an overview about how the palace was functioning.						<input checked="" type="checkbox"/>	
5 After the presentation, I feel I have enough information to enable me to formulate an overview about how the palace was constructed.					<input checked="" type="checkbox"/>		

6 After the presentation, I was able to allocate the correct placement for the element "Star" in the site.					<input checked="" type="checkbox"/>		
7 After the presentation I was able to allocate the correct placement for the element "Tree of life" in the site					<input checked="" type="checkbox"/>		
8 After the presentation I was able to identify a "garden" within the palace.					<input checked="" type="checkbox"/>		
9 After the presentation, I was able to recognize "water feature" in the site.					<input checked="" type="checkbox"/>		
10 After the presentation, I feel that I know the site better than before.						<input checked="" type="checkbox"/>	
11 After the presentation, I feel more positive towards cultural heritage sites than before.						<input checked="" type="checkbox"/>	
12 After the presentation, I feel more committed towards protection and preservation of cultural heritage sites.						<input checked="" type="checkbox"/>	
13 I wish to see more of such presentations in the future for cultural heritage sites.							<input checked="" type="checkbox"/>

Questionnaire: Part #2

Man
 Women
 Age: 21

Please read the questions carefully and give your answer by making a cross under the alternative that best matches your opinion.

1- In the computer generated world I had a sense of "being there"

Not at all	Very little	Little	Moderately	Somewhat	much	Very much
				<input checked="" type="checkbox"/>		

2- Somehow I felt that the virtual world surrounded me

Fully Disagree	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Fully Agree
				<input checked="" type="checkbox"/>		

3- I felt like I was just perceiving pictures

Fully Disagree	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Fully Agree
				<input checked="" type="checkbox"/>		

4- I did not feel present in the virtual space

Did not feel present	Very little present	Little present	Moderately	Somewhat present	Much present	Fully felt present
			<input checked="" type="checkbox"/>			

5- I had a sense of acting in the virtual space, rather than operating something from outside

Fully Disagree	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Fully Agree
				<input checked="" type="checkbox"/>		

6- I felt present in the virtual space

Fully Disagree	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Fully Agree
				<input checked="" type="checkbox"/>		

7- How aware were you of the real world surrounding while navigating in the virtual world?

Extremely aware	Much aware	Somewhat aware	Moderately aware	Little aware	Very little	Not aware at all
			<input checked="" type="checkbox"/>			

8- I was not aware of my real environment

Fully Disagree	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Fully Agree
		<input checked="" type="checkbox"/>				

9- I still paid attention to the real environment

Fully Disagree	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Fully Agree
			<input checked="" type="checkbox"/>			

10- I was completely captivated by the virtual world

Fully Disagree	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Fully Agree
				<input checked="" type="checkbox"/>		

11- How real did the virtual world seem to you?

Completely real	Much real	Somewhat real	Moderately real	Little real	Very little	Not real at all
		<input checked="" type="checkbox"/>				

12- How much did your experience in the virtual environment seem consistent with your real world experience?

Not consistent	Very little consistent	Little consistent	Moderately consistent	Somewhat consistent	Much consistent	Fully consistent
		<input checked="" type="checkbox"/>				

13- How real did the virtual world seem to you?

about as real as an imagined world	Much as an imagined world	Somewhat as an imagined world	Moderately	Little as an imagined world	Very little as an imagined world	Indistinguishable from the real world
		<input checked="" type="checkbox"/>				

14- The virtual world seemed more realistic than the real world

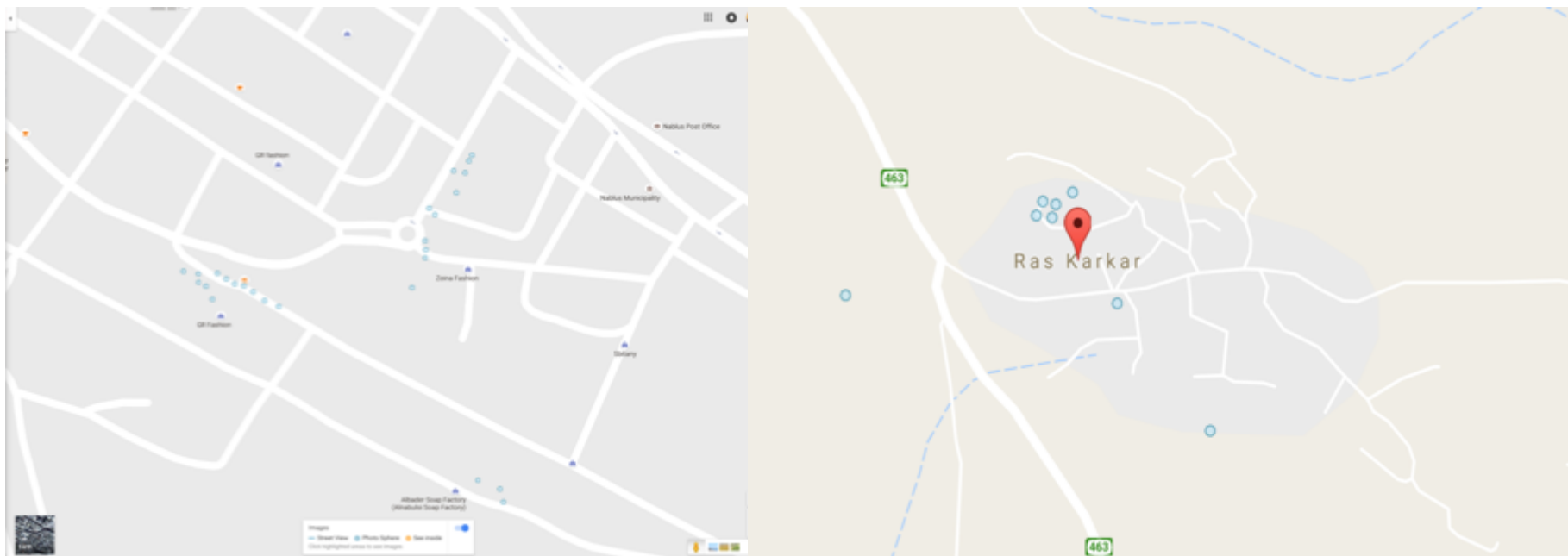
Fully Disagree	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Fully Agree
<input checked="" type="checkbox"/>						

On going work #2

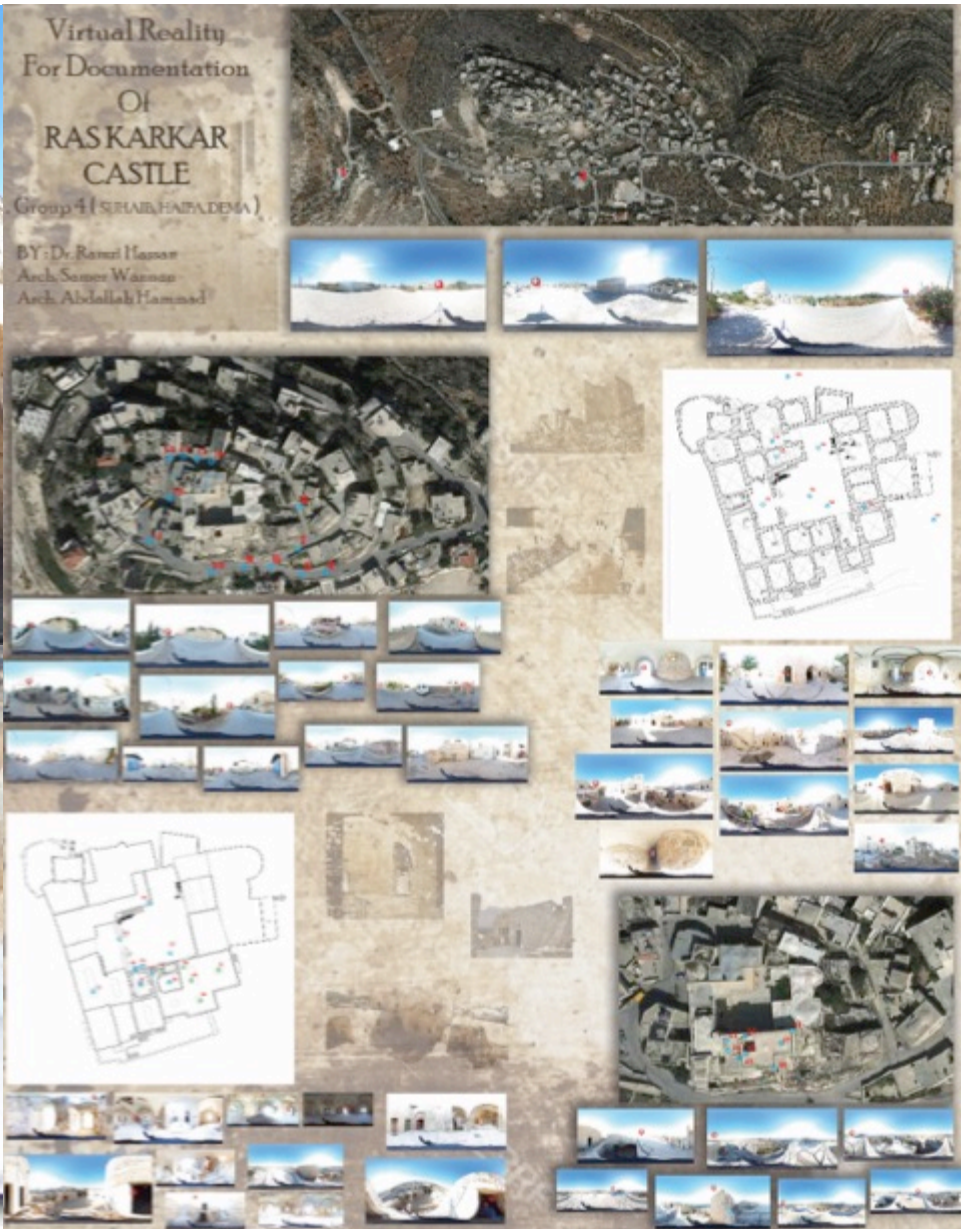
360 VR for documentations



Google Street View



On going work #2



Future work

Introducing a Digital Heritage Platform for Palestine

The project objective is to develop an interactive digital heritage platform for cultural heritage sites for Palestine. The technological platform is based on low cost digital technologies and open source tools, such as Virtual Reality, Panoramic Spherical Photogrammetry, Spatial Database, Geographic Information Systems, Three-dimensional Geometric Modeling.

Build a digital heritage platform that will facilitate a story guided virtual cultural heritage application. It will enable access to cultural heritage sites and landscapes, which are sometimes inaccessible to the public, by re-creating them digitally and then publishing them in various media formats.

Implement a new outreach strategy for enhancing public awareness towards cultural heritage sites by incorporating the digital heritage platform into the education system, schools and museums.



Experiencing VR by kids at Sorasteigen kindergarten, Ås. Photo: Sorasteigen