THE FUTURE OF THE PAST: From Amphipolis to Mosul, New Approaches to Cultural Heritage Preservation in the Eastern Mediterranean

Editors

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The following volume comprises a representative sample of current scholarship reflecting various issues presented at the conference *The Future of the Past, From Amphipolis to Mosul*, which took place at the University of Pennsylvania Museum of Archaeology and Anthropology from April 10–11, 2015. Our initial goal was to publish all the outstanding research papers presented at the conference, but due to previous publication commitments by several authors, this volume presents instead a sample of papers that cover diverse issues, from cultural diplomacy to three-dimensional modeling of cultural heritage sites.

The conference title was inspired by two sites that monopolized many media outlets in 2014, Amphipolis and Mosul. Both sites reflected the recent challenges that cultural heritage practitioners were facing when dealing with the dissemination of information, the conservation, management, but above all the protection of cultural heritage in the eastern Mediterranean and Middle East. Although the excavation and presentation of the monumental tumulus at Amphipolis was never extensively discussed during the conference, the site and the media coverage it received played an important role when outlining the objectives of this meeting. The discovery of the elaborate tomb in Amphipolis generated excitement for the Greek public, and the site became a locus of national pride and cultural identity. The project was officially "adopted" by the Samaras government (2012–15) in an attempt to mask the harsh reality of a struggling cultural heritage agency during a period of economic austerity in Greece. On a more dramatic note, the shocking news of the devastating destruction of several sites around Mosul, including the tomb of Prophet Jonah, the sites of Nimrud and Hatra, and the archaeological museum of the city, left us wondering how helpless we were in regions that were particularly affected by political instability and war. This is not a recent phenomenon nor is it limited to the Middle East; the destruction of sites in Libya, Mali, and Afghanistan demonstrated our inability to protect our collective heritage in regions where archaeological sites became victims of conflict and "cultural genocide."

The Future of the Past sought to bring together graduate students and emerging scholars from various academic disciplines to present new avenues in the field of cultural heritage. Our hope was to engage scholars in an intellectual dialogue, encouraging future cultural heritage practitioners from different disciplines to endorse new approaches and technologies to cultural heritage preservation in their respective fields. We were particularly interested in exploring the eastern Mediterranean, including Greece, Turkey, the Middle East, and northern Africa, regions that have been recently affected by armed conflict, political instability, and economic hardship. These are areas where we have been living and working for years, each one of us dealing with various issues such as community outreach and cultural heritage preservation. Participants to the conference were and are actively engaged in projects across the eastern Mediterranean and the Middle East, ranging in nature from the political dynamics of cultural heritage on the island of Cyprus to the use of social media in tracking cultural racketeering in Egypt, from digitization of massive datasets from the excavations at Ur to the use of satellite imagery in the documentation of recent cultural heritage destruction in Iraq and Syria. The regional and methodological diversity of these projects highlighted the far-reaching importance of cultural heritage preservation issues.

The conference was prompted also by a number of similar events in the United States and abroad, advocating a more active role for heritage professionals who, in the light of the recent developments in the Middle East, are facing something of an identity crisis. Since our conference in April 2015, we have seen numerous academic and other non-profit institutions, responding to the urgent call to act fast, to act now; to "go do good" as our colleague Morag Kersel encouraged cultural heritage practitioners in her keynote speech. The Million Image Database by the Institute for Digital Archaeology (a collaboration between Harvard University, the University of Oxford, and Dubai Museum of the Future), the CyArk initiative for the digital recording of cultural heritage around the world, the conference *Erasing the Past: Da'esh and the Crisis of Antiquities Destruction* at Wellesley College in September 2015, the workshop "Evidence and Emergency Responses to Cultural Heritage Destruction in the Middle East" at the 2016 Archaeological Institute of America Annual Meeting, and the

This event would not have been possible without the logistical and financial support of our institutions, including the Penn Museum, the Center of Ancient Studies and the Department of Art History at the University of Pennsylvania, the Department of Art History at the Tyler School of Art at Temple University, the Department of Classical and Near Eastern Archaeology, the Graduate School of Arts and Sciences, and the Graduate Group in Archaeology, Classics, and Art History at Bryn Mawr College. We are particularly indebted to the Penn Cultural Heritage Center for its technical, logistical, and generous financial support, and are especially grateful to Professor Richard M. Leventhal, who offered his guidance and assistance throughout this process. Further, we are thankful to the Archaeological Institute of America, and the Heritage, Conservation & Archaeology series for offering us a platform to publish the proceedings of this conference, and Ben Thomas, Director of Programs, who worked tirelessly for the preparation of the final manuscript. Finally, our many thanks go out to all the conference participants and contributors of this volume who shared their research with us.

recent symposium "Beyond Destruction: Archaeology and Cultural Heritage" at the University of California, Berkeley, are just a few of the initiatives that show how pressing an immediate response is to the senseless destruction of cultural heritage in the Middle East and elsewhere around the world.

Many of us who work and conduct research in the eastern Mediterranean return at the end of an excavation campaign or survey season to our respective institutions without developing a strong bond with our local counterparts who are, after all, responsible for the well-being of these sites. Public outreach and community engagement were the main themes of several conference papers, including the very promising but to this date uncertain collaboration between Boston University and Mosul University presented by Allison Cuneo, and the participation of local stakeholders in the management and preservation of urban and rural cultural sites in Turkey presented by Emily C. Arauz (neither are included in this volume). It is our strong belief that interacting with local communities regarding the value of their cultural treasures and treating them as equal partners is the first step toward a sustainable, constructive relationship that stands to benefit the preservation and protection of archaeological sites in these regions. It is our responsibility to share our experiences, our archaeological research, our finds, with the local communities in a positive and engaging way. Restricting access to the results of archaeological research impedes attempts to protect our cultural heritage, as it reinforces the public perception of academia as an elitist, secretive, bureaucratic, and dysfunctional ivory tower.

Further, in discussing the loss of cultural sites in our modern world it became apparent that we need to reconsider our priorities when designing research agendas in the selection of archaeological projects. We still measure the value of a prospective archaeological excavation in terms of the unique state of preservation of the site, its size and wealth during antiquity, and its ability to advance our professional trajectories. We almost never formulate our project goals based on the site's vulnerability due to large-scale agricultural activities, industrial installations, and modern settlement expansion. We therefore strongly encourage and support initiatives that promote the documentation and detailed recording of cultural landscapes as a whole, even if sometimes that means that we have to abandon the idea of excavating a promising site in order to preserve the cultural landscape of a region. We need to abolish the notion that archaeologists care only for a particular artifact, site, or time period but that we are aware of the necessity to embrace and protect landscapes beyond the confines, borders, and limitations of our academic institutions.

The advent of digital humanities is a blessing for our disciplines and a large number of papers in this conference addressed the use of new technologies such as laser scanning, remote sensing, and satellite reconnaissance, demonstrating a recent trend in cultural heritage agencies. These technologies, however, are very effective when coupled with a concise research agenda. As Kathryn Hanson's paper demonstrated, high-resolution satellite imagery may be the only way presently to document and publicize the large-scale, deliberate obliteration of cultural sites in embattled regions of Iraq and Syria. Such technological applications are needed today more than ever in light of the devastating effects of armed conflict, and the grave dangers that archaeologists encounter in war zones around the world. Further studies presented in this conference included the use of three-dimensional modeling in architectural documentation on the isolated island of Pseira by Miriam Clinton or the photogrammetric three-dimensional documentation of a Venetian fort in Herakleion, Crete, by Gianluca Cantoro, Vasiliki Sythiakakis, and Stelios Manioloudis. Three-dimensional digital models of archaeological sites are frequently used by educational institutions as a means of presenting complex large datasets to a wider audience, and to a degree such computational tools are used as a way to keep such institutions relevant with the most recent trends in digital humanities. The above-mentioned case studies demonstrate that the use of such non-invasive methods should become the priority in areas where archaeologists are struggling on the ground, facing outdated bureaucratic policies that limit the amount of excavation and survey permits issued each year.

We viewed this meeting as a platform for a multidisciplinary approach to cultural heritage preservation and urged all participants of this conference to forge new relationships, foster existing partnerships, and collaborate on new projects with the aim to protect the cultural heritage of the eastern Mediterranean, regardless of their academic discipline, institutional affiliation, and area of study. As one will notice throughout this volume, there are numerous ways to get involved, to respond to the call to action by Morag Kersel, to do good individually and collectively, and to rightly become "archaeo-activists" as our colleague Katie Paul encouraged us.

Go, Do Good! Responsibility and the Future of Cultural Heritage in the Eastern Mediterranean in the 21st Century

Morag M. Kersel, DePaul University

Abstract

Civil unrest, conflict, development, iconoclasm, looting, nationalism, publication, and storage are just a few of the more obvious cultural factors at play in our interpretation, interrogation, and protection of the past in the present. In recent years, and at this moment, cultural heritage has taken center stage in the global arena, as the destruction or safeguarding of sites, monuments, and artifacts in places like Cambodia, Egypt, Iraq, Libya, Mali, Syria, and Yemen are front page news. What can we do, what should we do, what are we obligated to do? Employing case studies from across the eastern Mediterranean, this paper, which stems from *The Future of the Past: From Amphipolis to Mosul, New Approaches to Cultural Heritage Preservation in the Eastern Mediterranean* conference keynote address, explores the impact of humans on the archaeological landscape, while urging cultural heritage practitioners to go do good, to be brave, to take chances, and to speak up on behalf of threatened landscapes, sites, and objects.

Introduction

In the fall of 2014, I was approached by Maggie Beeler, Konstantinos Chalikias, Ariel Pearce, and Steve Renette with an invitation to be the keynote speaker at *The Future of the Past: From Amphipolis to Mosul, New Approaches to Cultural Heritage Preservation in the Eastern Mediterranean*. The aim of the conference was to bring together Ph.D. candidates, recent Ph.D.s, and postdoctoral researchers in the fields of anthropology, archaeology, art history, and classics in order to discuss new approaches to cultural heritage preservation in the eastern Mediterranean. In thinking about the invitation and what I might contribute to a discussion on the challenges facing cultural heritage in the eastern Mediterranean in the twenty-first century, I decided to focus on our individual and collective responsibilities to the archaeological record of this region. Civil unrest, conflict, development, iconoclasm, looting, nationalism, publication, and storage are just a few of the more obvious cultural factors at play in our interpretation, interrogation, and protection of the past in the present. In recent years, and at this moment, cultural heritage has taken center stage in the global arena, as the destruction or safeguarding of sites, monuments, and artifacts in places like Cambodia, Egypt, Iraq, Libya, Mali, Syria, and Yemen are front page news. What can we do, what should we do, what are we obligated to do? Employing case studies from across the eastern Mediterranean, I explore the impact of humans on the archaeological landscape, while urging cultural heritage practitioners to go do good, to be brave, to take chances, and to speak up on behalf of threatened landscapes, sites, and objects.

Go, Do Good

Using art as a call to action, in the summer of 2011 the Chicago Loop Alliance, in conjunction with the United Way of Metropolitan Chicago, commissioned artist Kay Rosen with the hope of encouraging Chicagoans to carry out 100,000 good deeds (Guzzardi, 2011). This installation was and still is part of my daily bus commute through Chicago. Confronted by Kay Rosen's art during my daily bus ride, I contemplate the good I do or do not do in my life as an archaeologist. 100,000 good deeds in a single summer is a tall order for any archaeologist, but in the following I want to encourage us to be brave, to think outside of our comfort zones, to act ethically, to engage, to publish, to go do good when it comes to global cultural heritage. Doing a single good deed is the place to start.

I start all of my classes, public lectures, and talks with disclaimers. I attempt to credit all of the images I use in my presentations but I also claim academic fair use, hoping that someone will have an intellectual moment. Often there are human remains in the images from the Jordanian mortuary landscapes where I carry out my field research. I do not show these without some careful consideration and I do so with much respect for our ancient ancestors. Beginning classes and public lectures with these provisions I do two simple but good things—respecting human remains, while recognizing that there are negative connotations with representing dead people in public presentations and hopefully not violating any copyright laws. Doing good can be that easy.

The Future of the Past: From Amphipolis to Mosul, New Approaches to Cultural Heritage Preservation in the Eastern Mediterranean conference was brave by tackling subjects that until recently were not always part of the mainstream archaeology conversation in its various guises (in departments of Anthropology, Classics, Near Eastern Languages and Civilizations, History). I was delighted to be part of these conversations. I am a field archaeologist and I have worked in the Middle East (mostly Jordan, Israel, and the Palestinian Territories) for some twenty years, and every now and then I get to venture into the Cyclades, Greece. I am also someone who spends a lot of time thinking critically about the ethical dimensions of our work as cultural heritage practitioners and how I can do good in the world.

People need to come first in our hierarchy of mitigating disaster and harm. I am not a site or artifact hugger (when I was writing my master's thesis in historic preservation at the University of Georgia, I was introduced to the expression

"house-hugger," often a negative term used to describe those intent on saving absolutely everything). We cannot save every site or every artifact and we should not save every site or artifact (the good work of Cornelius Holtorf [2005] has very much influenced my thinking on archaeological sites as renewable and non-renewable resources). We are remiss if we do not actively inculcate a sense of human understanding in our practice as archaeologists. While we rightly care about the level of science, interpretation, and knowledge acquisition, we should also be committed to the plight of humans as it relates to our practice as archaeologists interested in cultural heritage inquiry, preservation, and protection.

Just as the Lorax (a "mossy, bossy" man-like creature) speaks for the trees against the greedy Once-ler in the Dr. Seuss parable concerning industrialized society, the environment, and the tragedy of the commons, we need to speak for the sites, artifacts and local communities in the areas in which we work (Seuss, 1971). Sites and artifacts need advocates and here I would argue that advocacy should be a central role for archaeologists. In what follows, I will provide some examples of how we can all be Loraxes, how we can all be brave, how we can speak up, and how we can all go do good.

Cultural Heritage at Risk

As a discipline we grapple with the threats facing sites, artifacts, and locals. What can we do, what should we do, what are we obligated to do? Papers at *The Future of the Past* conference recognized the challenges facing cultural heritage and offered potential solutions, including some cutting edge technologies like remote sensing, unmanned aerial vehicles, reflectance transformation imaging, digital documentation, and three-dimensional modeling in places like Crete, Cyprus, Egypt, Iran, Iraq, Iraqi Kurdistan, Israel, Jordan, the Palestinian Territories, Qatar, Syria, and Turkey. Sites and archaeology are at risk not only from conflict and unrest but also from development and urban expansion.

Cultural heritage is at risk all over the world and there is much to learn from and to share with our colleagues who work in Africa, Western Europe, North and South America, East Asia, and the often-overlooked South Pacific. There are excellent examples of archaeologists and institutions doing good in Cambodia (Heritage Watch; http://www.heritagewatchinternational.org/), in South America (Sustainable Preservation Initiative; http://sustainablepreservation.org/), and closer to home in Philadelphia with the work of Patti Jeppson (Philadelphia Archaeological Forum; http://www.phillyarchaeology.net/). Independently, we can carry out small acts of doing good but we also work for and within institutions that could be doing more good.

Institutional Doing Good

Institutionally we can go do good by following the lead of establishments like the University of Pennsylvania Museum of Archaeology and Anthropology (Penn Museum). In 1970, the Penn Museum issued the now-famous *Pennsylvania Declaration*, making it the first museum in the world to stop acquiring archaeological objects of dubious origin, perhaps obtained through the looting and plundering of ancient sites (Penn Museum, 1970). With this bold, groundbreaking act, the Penn Museum publicly acknowledged the link between the buying of undocumented artifacts and the destruction of archaeological sites leading the way for other museums and institutions to follow suit. Some forty-five years ago the Penn Museum did good, good that reverberates until today.

Cultural heritage does not exist in a vacuum and it is often affected by the expanding populations and the changing needs of the modern world. Cultural resource management (CRM) was born out of the need for the recording of sites that might be at risk in advance of development and construction (King 2013). We can do good by working in CRM, carrying out the best archaeology possible in order to record, analyze, and publish on sites and objects affected by development.

Those in higher learning believe that they will get an academic position and go on to teach and to research at an institution of higher learning: laudable goals but not entirely realistic. The changing nature of academia, the economy, and other factors should give us all pause to think about alternate careers paths in cultural heritage and archaeology (for an excellent set of papers on alternative career paths see the *Journal of Eastern Mediterranean Archaeology and Heritage Studies*, vol. 3.3, 2015). There are currently archaeologists doing good in various federal, state, and local government agencies including the United States Department of State, in non-profit organizations like the American Association for the Advancement of Science, and at for-profit CRM firms across the globe. As difficult as it might be, thinking outside of the traditional academic career paths and trajectories is one way to go do good.

Institutional Doing Good: Archaeologists as Agents of Diplomacy

In a recent volume, Christina Luke and I suggested that archaeologists are excellent agents of diplomacy, doing good on behalf of their respective states, sometimes without even knowing it (Luke & Kersel, 2013). By recognizing that archaeology and archaeologists are often deployed by various states as key elements in the foreign relations toolkit we can work to protect cultural heritage globally through various state-sponsored programs and initiatives. Working with both national governments and our own governments we can and do shape change at the institutional level.

Closer to home, we can do good by supporting the efforts of the United States Department of State to protect international cultural property (http://eca.state.gov/cultural-heritage-center/cultural-property-protection). When called upon we can write letters in support of memoranda of understanding between the United States and various nations to protect against the illegal importation of threatened archaeological and ethnographic materials. With a single letter we can speak for the sites, artifacts, and local communities to encourage institutional, country-to-country partnerships to protect the cultural heritage in the countries in which we work. In the spring of 2015, the United States Cultural Property Advisory Committee asked for letters in support, or against, renewal of the agreement between the US and Italy. There were 521 letters submitted; only 17 were from archaeologists. The majority of the submissions were from the dealer and collector communities, who were against renewing the agreement.

If we care about import restrictions on archaeological or ethnological material we need to be more vocal; we need to do good by writing letters.

While we can and do affect institutional change, I think our efforts are more realistically applied to our individual actions. I want to spend the bulk of this paper examining what we as individuals can do—there is a lot.

Individual Doing Good

In the mid-2000s at an annual meeting of the American Schools of Oriental Research (ASOR), I witnessed the following conversation, which became a touchstone for my research and for my own archaeological life. I was standing outside of a room waiting for a session to end so I could set up for the next session on archaeological ethics and professional responsibility organized by me, Ellen Herscher, and Patty Gerstenblith. Two other people were also waiting outside the room, and I overheard this conversation:

> Person 1: "Are we in the right place?"
>
> Person 2: "Let me check the program—no, next in this room is archaeological ethics."
>
> Person 1: "Ethics? I don't do ethics, let's get out of here."
>
> Person 2: "We had better figure out where we need to be or we will be stuck with ethics."

Not only was I miffed that they did not want to attend my session, I was stunned to think that there were archaeologists out there who believe that they "don't do ethics." If you are a member of a professional organization it is quite likely it has some type of guidance on professional conduct, responsibility, or ethics. After a lengthy process of review, public comment, and town hall meetings, ASOR recently released a new and improved code of conduct to which ASOR members should adhere (http://www.asor.org/). There are no penalties for non-compliance; organizational policies are all about self-policing and personal responsibility. No one will kick you out of ASOR or the Archaeological Institute of America (AIA) if you do not engage with local populations or if you fail to publish the results of your research, only you have to live with those demons. At a minimum we can do good by following the ethical guidelines of the professional organizations to which we belong.

In light of the recent controversy surrounding the AIA St. Louis Society and the sale of an Egyptian tomb group, the AIA Task Force on Ethics asked for public comment on the current AIA Codes of Ethics and Professional Standards (see Kersel, 2015a; 2015b). If you were a member of the AIA you were invited to visit the website and fill out the form with your comments, all of which were reviewed by the task force and taken in to consideration in amending the codes as they presently exist. We can all do good by filling out forms and taking surveys when asked for input on various issues affecting our discipline.

If we are successful in securing an academic position of some description, we can embed ethics in all of our courses—from introduction to archaeology to material culture analysis to Homeric epics. We can train and engage the next generation of world citizens, so that ethics are not an after-thought but part of the everydayness of archaeology in the classroom and in the field. By teaching ethics we can ensure that we never again hear "I don't do ethics" from a present or future cultural heritage practitioner.

We can do good by acknowledging some of the negative factors that we individuals have perpetrated, directly or indirectly. We do not publish enough or at all—we need to do good by recognizing this and not biting off more than we can chew. We can publish more. We all acknowledge that archaeology is a destructive practice. In excavating it is our obligation to record fully, analyze, and then report on our findings (in various languages and English). In the codes of our professional organizations and in the guidelines in many of the countries in which we work we are encouraged to publish the results in a comprehensive and timely manner, but we do not. Ill-defined research designs, no consensus on what constitutes a good report, writer's block, territoriality over sites and materials, deaths, births, life events, a lack of funding for publication—whatever the reason, we have a very poor publishing track record. Admittedly it is often more attractive and exciting to be in the field (true for us and the many funding agencies who routinely fund excavation but not write-ups) than writing your dissertation, your site report, or another article, but doing good means publishing. It is acceptable not to go into the field every summer (Kersel, 2015a). Go, do good by having a study season, analyzing material, and writing an article.

We need to engage locally. We are better about it than we have been in the past but we need to make this a part of initial project planning. Doing this type of good can take on all kinds of guises such as site tours, public lectures, museum exhibits, blogs, websites, working with local archaeologists, students, and people in the areas where we live and work: the opportunities are limitless. We need to acknowledge our actions as archaeologists and how they may appear to the outside world. We should consider our presence on the landscape—we come in, dig, take things away, leaving some to wonder how we are different from looters. We can go do good by acknowledging the historical legacies that we in the west bring to our work in the eastern Mediterranean (see the recent work of Corbett, 2015). Western archaeologists working in this region are direct result of a colonial legacy that requires future scrutiny, self-reflection, and acknowledgement.

Me Doing Good

The primary focus of my research is an examination of the efficacy of law in protecting archaeological landscapes, which are threatened as a result of looting due to demand for undocumented artifacts. Basically, I am interested in how law affects the average archaeologist, artifacts, and sites. In order to do this I have a two-pronged approach—archaeologically through the survey (pedestrian and drone) of threatened landscapes and ethnographically interviewing anyone with a vested interest in the buying and selling of artifacts and the destruction of the archaeological landscape. I have spent almost fifteen years carrying out this research in an attempt to be brave, to take chances, and to do good.

This is a very difficult subject for everyone committed to cultural heritage protection and I want to take this opportunity to commend Director General Dr. Monther al-Jamhawi and his predecessors at the Jordanian Department of Antiquities (DOA) for their ongoing support of this very unconventional project. The DOA is brave to issue a permit for such irregular field research but together I think we are doing good. At my area of interest along the Dead Sea plain in Jordan, there are a series of sites devastated by looting. Unfortunately, even in the face of DOA, NGO, and police initiatives, the sites continue to be pillaged in the quest for saleable Early Bronze Age pots. Since 2011 in conjunction with the Jordanian Department of Antiquities, the *Follow the Pots Project* (http://www.folowthepotsproject.org) has been studying these ravaged landscapes in Jordan.

Early explorers to the region identified the Early Bronze Age mortuary and domestic sites along the Dead Sea as the Biblical cities of the plain (Genesis 13:10–13; 14; 18–19). This ongoing association with the "time of the Patriarchs" resulted in a demand for items (usually pots) with Holy Land associations and the looting of archaeological sites. Over the decades, the Jordanian Department of Antiquities tried different strategies to combat illegal excavation at the sites along the Dead Sea plain, with limited success. They placed a fence and guards at the site of Bab adh Dhra', but the fence was stolen and the guards proved to be ineffectual in the face of a greater number of looters. Limited governmental resources, ongoing demand, and what can only be described as very effective networks of trade, allow for a booming business in the sale of Early Bronze Age material from the Dead Sea plain.

Meredith Chesson of the University of Notre Dame, Austin "Chad" Hill of the University of Connecticut, and me are focusing most of our attention on the Early Bronze Age IA (ca. 3600–3200 B.C.E.) cemetery of Fifa, which contains thousands of cist tombs whose use coincides with the emergence of the first walled, urban settlements in the region. In the archaeology of the southern Levant, this site represents an extremely important resource for researchers: it is one of only four known large Early Bronze Age cemeteries (the others being Bab-adh Dhra', Jericho, and Naqa). While there have been two small seasons of systematic excavation (1989–90 by Walter Rast and R. Thomas Schaub, and in 2001 by Mohammad Najjar on behalf of the Jordanian Department of Antiquities), unfortunately, since the 1980s the site has been the target of extensive systematic illegal excavation in search of artifacts destined for the antiquities market.

Since 2011, we have surveyed and mapped the extent of the cemetery, recording over 800 graves in the looted landscape, although more exist, yet to be looted or excavated. We have carried out the ethnographic side of side research with varying degrees of success, which we outline in a 2013 article on our successes and failures (Kersel & Chesson, 2013). I consider this a part of our doing good—publishing an article that highlights an epic failure in our research and at the same time acknowledging our need to collaborate more with our local hosts and villagers.

We are now in the third year of a five-year project (the *Landscapes of the Dead*), monitoring the changes to the site of Fifa and assessing the efficacy of government efforts, NGO outreach programs, and social media. Using unmanned aerial vehicle flyovers (drones)—both fixed and rotary wing—we are surveying Fifa each year to create high-resolution digital elevation models and orthophotographs. Year to year we compare the results in order to identify new looting episodes, to assess other changes at the site, and to evaluate the efficacy of schemes to lessen or stop looting. Drones are doing good by changing the way we record archaeological site looting, providing more information that may help in understanding how looting occurs. In combination with the pedestrian survey, the results of the aerial survey and ongoing ethnographic interviews allow us to conclude that there is ongoing looting, current Department of Antiquities protection efforts are not working, and somewhat surprisingly looters are revisiting previous looters' holes.

Based on three field seasons, it is possible to make some generalizations about looting at Fifa compared with the last 25 years. The pace of looting has slowed but it is still happening. An element of our ongoing research is the examination of why looting has abated: Are there too many holes and no more graves to loot? Have looters turned to more lucrative financial options or is there no demand for Early Bronze Age ceramics?

In order to answer those questions, we need to turn to the people associated with this landscape and its products. In the ethnographic element of this project we (with an IRB-approved protocol from DePaul University) spoke to those with an interest in the sites and objects from the Dead Sea plain. Over the past decade or more, I have spoken with looters, dealers, museum professionals, government employees, foreign and local archaeologists, locals, tourists, cultural heritage practitioners, foreign and local collectors, lawyers, customs and border agents about these landscapes. We continue to engage the various constituents in order to arrive at a better understanding of why people loot, how objects move, why people and institutions want these pots, and questions around site protection—how, why and if we protect these sites.

In 2013–14, I was fortunate to spend nine months based in Jordan, which afforded me the opportunity to interview a wide variety of people interested in Early Bronze Age pots. I am still transcribing and coding interviews, but from preliminary data of the limited discussions with Ghor es-Safi locals who illegally excavate at the sites, I can make an overall generalization that they loot in the off-agricultural seasons (tomatoes, eggplant) when there is no other full-time work. Digging is a viable economic activity because they know that a "big black car" from Kerak (the closest big city) or Amman will come by the site and buy whatever they recover. Knowing that there are networks in place that will reward the looter is keeping the enterprise of illegal excavation alive. I also have archival and ethnographic information on the networks in Kerak and Amman as the driving force behind looting in organizing local labor to dig at the sites in order to procure saleable items. This practice has gone on for decades, with particular families involved in various nodes along the artifact pathways.

One season we encountered three different groups of looters. Our Jordanian Department of Antiquities representative had one group arrested after catching them in the act of looting. The individuals were not fined but did spend the night in jail, an action that was probably not a deterrent. Current prices for the pots recovered outweigh the potential penalties if caught. Another group we encountered was comprised of five kids ranging in age from about 8 to 14 years, using the very same tools and techniques as the "more professional" older looters. As I demonstrated in earlier research on looters in the Palestinian Territories it is often a family tradition with kids accompanying adults in to these landscapes to recover artifacts (Kersel, 2007). Clearly any anti-looting initiatives need to focus not only on stiffer penalties and policing but also on educational programs with younger generations.

During my time in Jordan I worked with a non-governmental agency, the Petra National Trust (http://petranationaltrust.org), to develop a module for their Petra Junior Rangers and the Youth Engagement Petra programs on the illegal excavation of artifacts and the trade in antiquities. The workshop *Why Looting Stops Us Learning About Petra*, was implemented in June of 2014 with 100+ girls aged 12 to 17 from Amman and the Petra region. During the one-day workshop participants were introduced to the basics: What is an artifact? What is a site? What does an archaeologist do? How is an archaeologist different from a looter? They were then asked to think about and comment on the actions of looters, middlemen, collectors, and the PNT, DOA, and Petra Development and Tourism Regional Authority, with respect to protection, site looting, and the trade in antiquities. They then visited the Petra Visitor Center Museum where they were asked to consider the educational role of artifacts, museums, and sites. We had lunch and then broke out into small groups to discuss how we would solve the looting problem.

In the final part of the workshop, participants interviewed the Petra stall owners and tourists about selling and buying of archaeological artifacts. The Petra National Trust workshop on looting and site protection at Petra is an excellent first step in introducing the topic to a younger generation of Jordanians. There have been two additional workshops in the last year with young men from the Petra and Amman areas. There are many insights, comments, and questions from the participants. One question raised repeatedly was: Why do people want to own an artifact? For me this was one of those moments that make this often frustrating and heartbreaking research all the more meaningful. The primary focus of my time in Jordan was to examine demand—why anyone would want Early Bronze Age pots from Jordan. Many of the participants in the PNT program agree that it would be difficult to arrive at solutions to looting without understanding why people want artifacts.

People buying Early Bronze Age pots from this region are typically tourists and religious pilgrims to the area who want to leave with a small memento of their trip. The pots are prosaic, inexpensive keepsakes that evoke a message about an associated biblical place. Bab adh Dhra' has been identified not merely as a City of the Plain but as biblical Sodom, a city synonymous with sin (Rast, 1987), and who doesn't want to own something from the original "sin city"? According to data collected, these biblical associations are what make artifacts from the Dead Sea plain sites desirable. The intricacies and mechanics of the market is a topic for another day but suffice to say there are illegal Jordanian artifacts legitimately available for the willing consumer in Israel, on eBay, and in other markets. The demand for Early Bronze Age pots shows no signs of subsiding and if, as the drone work demonstrates, looting is lessening at Fifa, how will demand be met?

With the generous permission of, and in cooperation with, the Jordanian Department of Antiquities, as well as collaboration with the Petra National Trust and relationships with the local communities of the Dead Sea plain, this research is ongoing. There will be more drone work, more archaeological site surveys, and possibly future excavations to determine if there are any graves left. There will also be more interviews, more local engagement, and more collaborative efforts with NGOs, the Jordanian Department of Antiquities, and researchers, to ask similar questions of their landscapes in other parts of the world. This work is carried out in hope that we are doing good.

The Fundamentals of Doing Good

In concluding I want to remind us of some of the basics for doing good. If you work in the field:

- Know the laws—local, state, and federal
- Know the relevant government regulations
- Know the locals
- Know the area and the customs
- Know or attempt to know the language
- Excavate less, publish more
- Write letters, lobby, speak up. We should all be archaeo-activists on behalf of the past
- Thank your mentors, teachers, students, family, friends, parents, partners, local communities, we do our best good when we work with others

Remember the Lorax! We need to speak for the sites, artifacts, and local communities, and we need to acknowledge that we all "do" ethics—even if we do not think we do.

Be brave

Speak up

Act now

Go, do good.

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Contested Antiquities, Contested Histories: The City of David as an Example

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Abstract

The archaeological site of the City of David in the East Jerusalem area called Silwan is a fiercely contested space, physically, ideologically, and historiographically. Excavations have unearthed multiple layers of material cultural remains; however, the thought that this place may have been the site of the biblical King David's city has come to dominate its interpretation, although remains from what would have been this period have been frustratingly sparse. In sketching the history of the site, I focus on recent developments, in which a right-wing Jewish settler organization has become its sole manager. Archaeology and heritage management is being put to the service of an ideological program of strengthening the Jewish ties to the city at the expense of its Palestinian residents. The presentation of the site has become subject to a privatization of heritage management that raises critical issues for both heritage management and historiography.

Introduction

The archaeological site of the City of David in the Silwan area of East Jerusalem area is a fiercely contested space physically, ideologically, and historiographically. Excavations have unearthed multiple layers of material cultural remains dating back to the Chalcolithic period, with the most significant finds being underground water channel systems from various periods, massive fortifications from the Middle Bronze II period (around 1800 B.C.E.), and architectural remains from the early Roman period (Tarler & Cahill, 1992). Remains from the Iron II period (ca. 1000–500 B.C.E.), the Persian, Byzantine, and early Islamic periods have also been found. The thought that this place may have been the site of the biblical King David's city has enticed the imagination, although remains from what would have been this period have been frustratingly sparse.

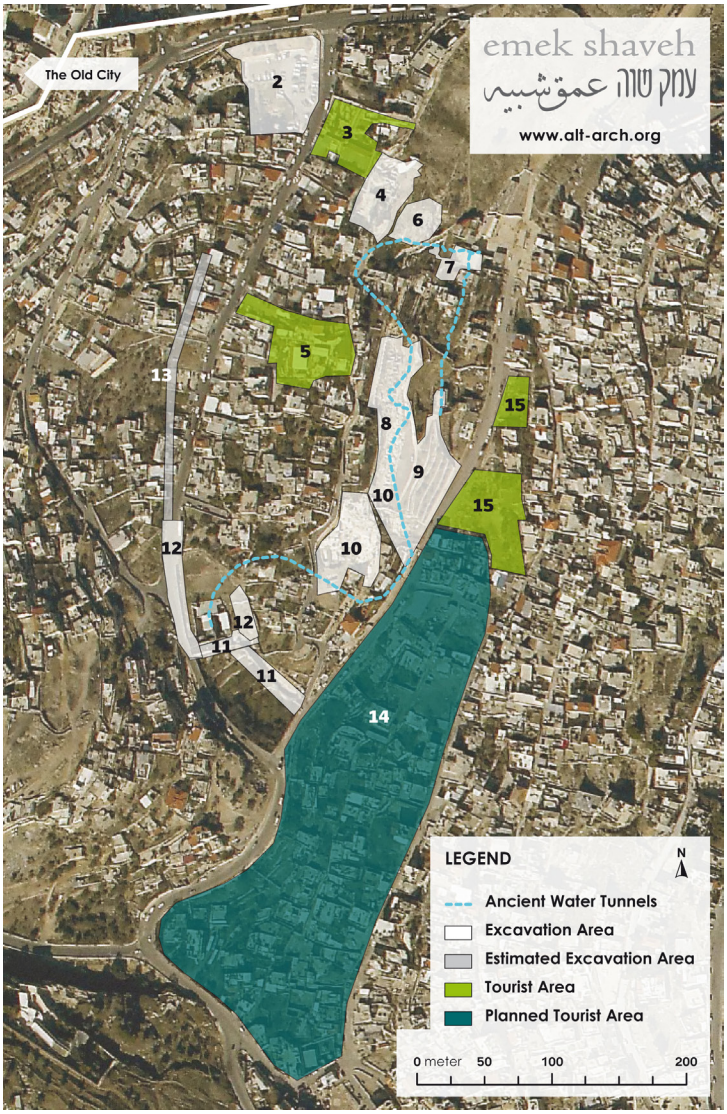
In the following paper, I present the history of the archaeological site of the City of David. For reasons that will become apparent, I focus in particular on recent developments in excavation practices, site management, and presentation. At present, a private foundation with clear ideological goals manages the site, which is located in a highly contested urban area with a political status that is yet to be determined. East Jerusalem is considered by international law to be under Israeli occupation, an official status governed by a whole set of rules, whereas Israel considers the territory as a part of Israel. Since 1997, the right-wing Jewish settler organization El'ad has managed the City of David Archaeological Park, and over the last 15 to 20 years this group has built up an infrastructure for tourism and overseen nearly continuous excavations (http://www.cityofdavid.org.il/en; Reich, 2011). Most recently, El'ad has obtained approval for a new visitors center and parking garage complex that will connect the City of David to antiquities and tourist sites within the walls of the Old City of Jerusalem, including the Western Wall Plaza complex.

These achievements may at first seem to be admirable efforts to preserve cultural heritage. The reality is, however, that archaeology and heritage management at the City of David is being put to the service of an ideological program of strengthening the Jewish ties to the city at the expense of the Palestinian locals who make up the majority of the population in the area, and who also have a stake in its management and presentation. The site, which is visited by ca. 500,000 visitors per year, including foreign and Israeli tourists, school children, soldiers, and other groups is being shaped by this ideology-driven foundation and its supporters in what might be characterized as a privatization of heritage management. In describing the City of David as a case study, I hope to elucidate some of the problematic and complex issues of archaeological practices and heritage protection that this case raises.

The Site of the City of David

Even in choosing how to describe the area of the City of David one faces challenges, because the terminology chosen is not neutral. The area in question comprises a relatively small area located on a ridge running south of the Haram al-Sharif, the area of the Dome of the Rock and al-Aqsa Mosques, or Temple Mount area. The area referred to as the City of David—a name which was first applied to the site by the French archaeologist Raymond Weill, who excavated there in 1913–14 and makes a very specific historical reference to the Bible's most famous king—is most often called Wadi al-Hilwe by its current, mainly Arab, residents (Weill, 1920). The name City of David privileges one phase of history, one that resonates with a Jewish national agenda and perhaps even more strongly with its Christian, biblically oriented supporters.

The area in question is the southern spur of the lower and eastern of two hills that comprise the earliest known settled part of Jerusalem/al-Quds. In the valley on the northeastern side of the ridge is the only natural spring in the area, the Gihon Spring, Spring of the Virgin, or 'Ein Umm ed-Daraj (The Well of the Mother of Steps, named for the Mameluke period staircase descending to the spring). The presence of this spring made this area a natural location for a settlement. An extensive channel and underground water system exists within the hill, parts of which have been in operation since the Bronze Age (third millennium B.C.E.), and which has been extended and improved over the centuries (Tarler & Cahill, 1992, pp. 61–4; Reich, 2011). These channels and tunnels connect to a system of pools at the southern end of the ridge, including the Pool of Siloam and the Birkat al-Hamra.



Map Legend

1. Silwan
2. The Givati Parking lot
3. The City of David Visitors' Center
4. Area G (Area of "Stepped stone structure")
5. The Aderet Compound (residential settler structure used to host lectures by El'ad)
6. Kenyon excavations
7. The Gihon Spring excavations
8. The Shiloah Channel and Tunnel (Channel II and Hezekiah's Tunnel)
9. Area E (area owned by JNF, excavated by Shiloh)
10. The Weill excavations
11. The Shiloah Pool
12. Tunnel near the Shiloah pool
13. A tunnel in Wadi Hilweh street
14. The El Bustan neighborhood
15. Parking lots

Courtesy Emek Shaveh, http://alt-arch.org/en/booklet_online/

The steep hill, with the Emek Kidron, Kidron Valley, or Wadi Sitti Maryam, or Wadi al-Joz, to the east, and the Tyropoean (a Roman name) to the west, has been of key interest since the beginning of European explorations in the Holy Land and the Middle East in the beginning of the 19th century. During the first phase of exploration the area was known as the Ophel (in particular the northernmost part of the spur). Traditionally, the site of the biblical royal city of Jerusalem was thought to have been in the western part of the present Old City.

Barely populated up to the mid-20th century, the area in question is now home to about 4,000 Palestinian residents and almost 1,000 Jewish settlers. The Palestinian residents identify the area as belonging to Silwan, a village that began on the eastern slopes of the Wadi al-Joz, that by the mid-20th century had expanded westward across the valley and in the last several decades has covered also the western slope and top of the hill, known by locals as Wadi al-Hilwe (Yas, 2000, p. 20). Local traditions date the village of Silwan to the time of Omar, the second caliph, who conquered Jerusalem in 637 C.E. According to tradition, he entered the city on foot while his servant rode a camel. This impressed the people, who gave him the key to the city. In return, Omar granted the wadi to "Khan Silowna," a community that lived around the spring in the valley. The spring of Silwan is mentioned in a 10th-century source and the village appears in Ottoman tax registries in the 16th century (Sharon, 1997, p. 24; Le Strange, 1890, p. 221).

The hill of the site of the City of David was sparsely or barely populated in the later centuries of the Ottoman period. In the 19th century, a small Yemenite Jewish group established a village there called Kfar Shiloach. In the clashes between Arabs and Jews in 1929 and 1936, these Jews left and were resettled in the Old City. The present Jewish settler community within Silwan is not connected to the Kfar Shiloach community.

Before returning to the present challenges of heritage protection in this complex site, I will present a brief survey of its archaeological history.

The First Archaeological Explorations: Mapping and Exploring the Bible's Lands

The political and ideological contexts of the modern Western interest in the Middle East are the competition between the national powers of the 19th century to dominate the world, and the Enlightenment-inspired desire to display antiquities at home that showcased this newly established national glory (Díaz-Andreu Garcia, 2007; Trigger, 2006 & 1989; Silberman, 1982). Interest in the Bible and in particular the "Land of the Bible" was another motivation. In 1838, the American biblical scholar and theologian Edward Robinson crawled through what came to be called Hezekiah's tunnel, a part of the extensive water systems in the City of David. Edward Robinson was the first Westerner to begin explorations at the site, and published this and other of his explorations in *Biblical Researches in Palestine, 1838–52* (Long, 2003, pp. 131–35).

The next major explorer was Charles W. Warren, a British Royal Engineer and an archaeologist, who was sent in 1867 by the Palestine Exploration Fund to Jerusalem. He made a number of probes in the area of the Ophel (the northern part of the City of David site) after he had been denied permission by Al-Qawf, the Muslim authorities, to explore in the Haram al-Sharif area. He was able to show that the present platform of the southern part of the Haram al-Sharif rests on a deep foundation from the Herodian period. Warren came across numerous walls and also further explored the underground water channel systems, parts of which were named after him.

In the 19th century, British, German, French, and American interests in Ottoman Palestine reflected a combination of scholarly, cultural, and military interests. A good example is the British project to map the Holy Land in the *Survey of Western Palestine: 1848–1910*. At the founding meeting of the Palestine Exploration Fund, founded 1865, the Archbishop of York read from the founding document, a statement that typically illustrates how the West understood and justified its interest in the Middle East:

> [O]ur object is strictly an inductive inquiry. We are not to be a religious society; we are not about to launch controversy; we are about to apply the rules of science, which are so well understood by us in our branches, to an investigation into the facts concerning the Holy Land. "No country should be of so much interest to us as that in which the documents of our Faith were written, and the momentous events they describe enacted. At the same time no country more urgently requires illustration [...] Even to a casual traveller in the Holy Land the Bible becomes, in its form, and therefore to some extent in its substance, a new book. Much would be gained by ...bringing to light the remains of so many races and generations which must lie concealed under the accumulation of rubbish and ruins on which those villages stand [...] (Howe, 1997, p. 37).

The City of David, and Jerusalem in general, were ideologically significant to the early explorers as the place in which the Israelite monarchy was founded (Silberman, 1982, pp. 151–60; Skjeggestad, 2001). For Europeans and Americans the biblical history was *their* history and appealed to the imagination in terms of visualizing the biblical landscape. Countless travelogues, eventually with photos, described biblical sites such as Bethlehem, Nazareth, the Jordan River, Jerusalem—the holy city, Emmaus, and so forth, often uncritically incorporating the present life of local residents into a "biblical picture," without acknowledging that they had their own context and story (Long, 2003). Another significant motive for the early explorations was the collection of actual topographic intelligence and the production of maps (Moscrop, 2000).

In a period when nationalism was becoming an increasingly important ideology in the West, the "history of ancient Israel" was also being told by historians for the first time, as a critical history. The parallels between contemporary rhetoric of nation states, and the construction of historiographies of ancient Israel are mirrored in the language describing, for example, King David's conquest of Jerusalem and consolidation of his kingdom, which was often formulated in what we recognize as anachronistic statements such as: "When David captured the Jebusite stronghold of Jerusalem, he transformed it from a small regional town to a national capital" (Skjeggestad, 2001). Further, biblical narratives provided archaeologists with a framework that has been internalized by practitioners of "biblical archaeology" (and later, by Israeli archaeology), to a degree that it has gained complete hegemony and its ideological bias often hard to identify (Whitelam, 1997).

The British Mandate period

British interests in the Levant were formalized in 1920, following the dissolution of the Ottoman Empire. By this time archaeology had become a distinct discipline and a period of more formal and methodological excavations began. The British Mandate authorities conceived of the explorations as an international endeavor, and invited all who wished to participate. The records from archaeological institutions that conducted fieldwork during the British Mandate period show a concern to maintain a scientific archaeological profile, and to avoid any ideological concerns to guide the endeavors. However, funding and interest were a problem and not many responded. The mythology and romanticism of archaeology often met the hardship of the realities of excavation work, and it seems that the strategy had to be consciously abandoned, and other more popular appeals had to be made:

> Palestine appeals more to Biblical and Religious students than to purely scientific archaeologists, and without financial assistance in the form of fellowships or bursaries it is difficult to recruit any students (J.W. Crowfoot, 1927 as quoted in Gibson, 1999, p. 122).

This quote touches on one of the ethically troublesome and problematic issues of archaeology and heritage management, and of historical inquiry and historiography (such as the question of whose story of the past is being told), namely the relationship between funding and special interests.

The Palestine Exploration Fund was responsible for securing excavation rights for the British and protecting monuments. The British set up the Department of Antiquities Palestine to draft laws of protection and to take care of conservation and repair. In 1929, the American philanthropist John D. Rockefeller visited Palestine together with Egyptologist James Henry Breasted, the founder of the Oriental Institute of Chicago. Rockefeller endowed a museum that was founded in 1930 and opened in 1938 as the Palestine Archaeological Museum, known more commonly referred to as the Rockefeller Museum (Silberman, 1997, p. 72).

The Jewish *Yishuv*, the Zionist settlers in Ottoman Palestine and Mandate Palestine, established their first antiquities organization in 1913–14, which became the Jewish Exploration Society in 1920. They submitted a proposal for excavations at the City of David and received a license to dig in 1921, but they never carried through with the actual fieldwork, most likely for failure to raise the necessary funds. The organization became known as the Israel Exploration Society in 1948 (http://israelexplorationsociety.huji.ac.il/ies.html). The Israeli Department of Antiquities, established in 1948,

became the more independent body known as the Israel Antiquities Authority (IAA) in 1990.

One of the most important finds from the City of David in this period was the uncovering of what was then termed the Jebusite Ramp, which is now referred to as the Stepped Stone Structure. The understanding of this structure, which was later excavated by Kathleen Kenyon in the 1960s and Yigal Shiloh in the 1970s and 1980s, has been debated among scholars. This is the case in particular because one of the interpretations dates part of the structure to the 10th century B.C.E., when it would have formed a platform for what would have been the summit and the palace of King David. Most likely the structure dates to the Late Bronze or Early Iron Age (before the time of David), and was a composite structure used to fortify the steep edges of the hill in order to support a structure that no longer remains, and may have been substantially rebuilt throughout various periods (Steiner, 2003, pp. 351–61; Finkelstein et al., 2007). In 2005, Eilat Mazar claimed to have found King David's temple at the top of the hill, a claim that rendered controversy among archaeologists, see below.

The Irish archaeologist R.A.S. Macalister, who discovered the Jebusite Ramp during his 1920s excavation, was disappointed by the lack of artifacts, but also did not think that this was due to looting. In an intriguing way, Macalister reveals his attitude toward the local population when he comments further on his observation that the locals have not taken anything of importance, saying that this is the case, "although most of our workmen came from Silwan, a village that enjoys no very exalted reputation for honesty and other virtues," (quoted in Reich, 2011, p. 91). Important finds included an inscription of Judahite names, and a number of Persian era seals (Reich, 2011, pp. 92–3; Macalister & Duncan, 1926).

John Winter Crowfoot, the second director of British School of Archaeology in Jerusalem, excavated in 1927–28 on the western slope of the hill. The British team dug through many meters of debris and uncovered Byzantine and early Islamic private dwellings in addition to remains of Second Temple period dwellings and a thick wall with a gate construction. Kathleen Kenyon excavated an area further north in the 1960s and recently sections that intersect with it have been excavated by the IAA as part of a salvage dig project, which I will return to below.

The Jordanian Period

The war following Israel's proclamation of statehood in 1948 ended in the armistice lines that still mark the so-called Green Line in 1949. The Old City of Jerusalem and the areas to the south, north, and east of it, including the area of the City of David, fell under Jordanian rule.

The most prominent archaeologist of this period working in the City of David was Kathleen Kenyon, a British archaeologist who had made her breakthrough with the excavation of Jericho in the 1950s. She undertook the first extensive excavation of the City of David in 1961–67. One of the ideologically significant finds from this period was a part of a so-called Proto-ionic capital, thought to be perhaps one of the few remains of what might have been the "Solomonic" temple. There is, however, a growing body of material to show that this motif is not Solomonic at all, and likely not a capital (e.g., Franklin, 2011).

It was during this time period that Israeli archaeology was formed. However, Israeli archaeologists had no access to East Jerusalem, including the City of David. From the beginning Israeli archaeology was ideologically motivated and sought to connect archaeological exploration with the growing field of Israeli national history (Zerubavel, 1995). Names such as Bejamin Mazar (historical geography of Israel) and Yigael Yadin (the second chief of staff of the Israeli Defense Forces) are central to this period of Israeli archaeology (Elon, 1997; Silberman, 1993). Important sites excavated include Masada, Beth Shean, Megiddo, Hazor, Gezer, and the Qumran Caves. The excavations at Masada were carried out with manpower from the army, and the site became the swearing-in site of soldiers, with Masada as the ultimate symbol of Jewish resistance and sacrifice (Ben-Yehuda, 1995; 2002). Kathleen Kenyon had her last field season in Jerusalem in 1967, after the end of the Six-Day War. This war brought many changes to archaeology in Jerusalem and Israeli archaeology as a discipline.

Israeli Archaeological Excavations (post 1967)

The Six-Day War in June of 1967 brought major changes as Israel's victory in this war gave Israeli archaeologists access to key sites in Jerusalem that had been inaccessible to them since the foundation of the state. In the first decade of Israeli occupation, intensive building and development took place in key areas of East Jerusalem, and archaeological study of both Jerusalem and the West Bank intensified. The facts of the contested understanding of the status of East Jerusalem is one of the thorniest issues in the efforts to conclude a peace agreement, and impacts in fundamental ways how different people and parties view and interpret the practice of archaeology in East Jerusalem (on the many aspects of Jerusalem's status and space see Lustick, 1997; Dumper, 2014).

The major excavator in the area of the city of David in this phase was Yigal Shiloh (1978–85). Financed by a South African philanthropist, Shiloh's excavations were carried out as what he himself described as "classic" digs, meaning that they were conducted under the auspices of a university, in this case the Hebrew University of Jerusalem, and a foreign consortium, with many different staff people, volunteers, and in short field seasons, with time to process finds in between active seasons (Shiloh, 1984). During this time, plots were mainly excavated in an area owned by the Jewish National Fund (channel systems), in addition to excavations around the Pool of Siloam, and scattered areas on the top of the hill. Shiloh also carried out geological and survey studies, and an extensive study of the underground water channel system (Shiloh, 1984, p. 19).

Disruptions by ultra-Orthodox Jews opposed to the disturbance of graves caused protests, sometimes violent, in the 1980s. This type of hostile opposition was a part of an anti-secular movement, and in the case of the City of David involved direct attacks on Yigal Shiloh himself (Sprinzak, 1993, p. 468). These religious communities viewed archaeologists as part of a secular threat that disregarded and infringed upon religious concerns and sensibilities. Shiloh's excavations

in the City of David were not geared toward involving the public and there were few visitors to the excavation, which remained a strictly scholarly endeavor. Perhaps, sensitivity to Jewish religious groups was part of what led to a slow-down of excavations in the West Bank during the Likud years (1977–92), although this connection has not been carefully studied (Greenberg & Keinan 2007, p. 25). This lull was matched by a sudden increase after 1992, which also has a political context, although a very different one. Political changes following the 1991 Madrid Talks and the 1993 Oslo Accords had an impact on Israeli archaeology. In Jerusalem, settler organizations that had been operating within the Old City became increasingly anxious over the prospect that there would be negotiations over Jerusalem (Greenberg, 2009b).

Based on this rough and incomplete summary, we are able to say that up to the 1980s and even into the 1990s the expected balance between archaeological and scientific concerns and the proper respect for present inhabitants in Ein al-Hilwe/the City of David was maintained in general, albeit with changing assumptions and attitudes. Even under various colonial and neo-colonial paradigms, as well as nationalist agendas of various sorts, high scientific standards were maintained, and much of what was excavated and conclusions that were drawn from the material were subject to stringent scholarly debate and inquiry. I will venture that this standard is now in jeopardy. Beginning in the 1990s, and in particular in the last decade or so, a steady but eventually marked change has taken place toward much more ideologically driven archaeological practices and a virtual outsourcing of heritage management to the right wing nationalist settler movement, as I hope to show in the following.

The Present Context: Ethical and Political Dilemmas

The area around the City of David began to experience increased urbanization and the number of residential buildings grew in the time following the 1967 war. This was partly due to the growth of Silwan and partly due to an influx of Palestinian refugees. Ignoring the fact that people were already living in Ein al-Hilweh, Israeli authorities in 1970 declared the City of David site as part of a National Park (B'Tselem, 2014). Regulations stipulate that residential development is not supposed to happen in National Parks, but in this case it has led to a situation in which people are living somewhere where there for the last 45 years has been no urban planning, no services, no infrastructure development, and the expansion and building that has taken place has therefore been illegal and thus subject to demolition orders. Many of the present problems for the residents of Ein al-Hilweh stem from this situation, which they experience as one of siege.

In the early 1990s, following the First Intifada and Madrid Process, and in the years of the Oslo Process, the City of David area became a target for the settler group El'ad, headed by David Beeri (Rapoport, 2006). The name El'ad is a Hebrew acronym for "To the City of David." Beeri had close associations with Ateret Cohanim, a group that since the 1980s has systematically targeted homes and properties surrounding the Haram al-Sharif in the Old City for settlement and for religious schools, with the long term goal of rebuilding the Third Temple and reinstating the temple cult (Rapoport, 2006; Dumper, 2002, pp. 45–8). The ideological affiliation of El'ad was quite clear from the beginning, with the stated goal of acquiring properties and strengthening Jewish ties to Jerusalem.

Beeri began to operate as a tour guide with a fake license, and scouted out the City of David area to map out previous Jewish properties (Rapoport, 2006). He also befriended locals under this false pretense of being a tour guide. He contacted the JNF to ask for authorization to remove Palestinian residents from land that had previously belonged to Jews. Beeri's organization was able to take over properties through the Absentee Property Law, even though the then current Attorney General had instructed that it not be applied in East Jersualem. This law basically declares that properties whose owners were staying in an "enemy country" could be confiscated and become state land. For example, the Abbasi family home, near the Gihon Spring, was declared absentee property and confiscated (according to several accounts, including Beeri's own testimony, through a series of tricks), and the Abbasi family was evicted (Rapoport, 2006). Later, this house became the site of a salvage excavation (Reich, 2011).

Other families have been evicted through the Custodian of Absentee Property since this time, and many of these cases have ended up in court. In 2011, Seth Morrison, the Chair of the JNF, resigned over the eviction of the Sumarin family, who were declared absentees even though members of the family had been present and residing in their home in 1967. Morrison resigned over what he felt to be a "violation of human rights," (Morrison, 2011). In 2006, the Ghozlan family, with 30 household members, was evicted from their property. The irony is that the father of this family had saved Jews of the Shiloach village from a pogrom in 1929, for which he had received a letter of appreciation (available on the Emek Shaveh website: http://alt-arch.org/en/yemenites/). In 2014, El'ad moved around 200 Jewish residents into seven buildings that they had purchased through Palestinian middlemen at exorbitant prices, sometimes without the knowledge of the present residents. The settlers were moved in during the night under the protection of the Israeli police (Hasson, 2014). The practice of confiscating or taking over property and then conducting digs under it instituted a pattern that has been repeated by El'ad in this space already burdened by legal quagmire, contested understandings of sovereignty status, special interest groups, and urban poverty.

Archaeology and Heritage Management in the Service of a Political Agenda

In addition to their ongoing policy to take over properties and populate Silwan/The City of David, El'ad was able to obtain the control of the archaeological site of the City of David in 1997 on behalf of the Nature and Parks Authority (B'Tselem, 2014). This step marked a decidedly new phase and pointed in the new direction that the stewardship of Jerusalem antiquities was taking. El'ad had previously received permission from the Jerusalem authorities to set up an office at the Abbasi House near the Gihon Spring, and then to set up a visitor's center west of the Stepped Stone Structure, higher up on the hill.

With the "repairs" that these buildings needed followed the requirement of a salvage dig, which in the case of the Abbasi House was carried out by the IAA, under archaeologist Ronny Reich. Reich was familiar with the City of David from his previous work on *miqvaot* (Jewish ritual baths) in the area (Reich, 2011). Fieldwork under the Abbasi House, has been ongoing since 1995, exposing numerous ancient habitation layers. Major finds include massive Middle Bronze (MB) Age II fortification systems and one of the largest hewn water systems from MB II, also bullae from the eighth century B.C.E., and other artifacts from the Iron II and Second Temple Period (Reich, 2011, pp. 150–51). The archaeologists later connected this excavation to another nearby one that focused on the channel systems on the east side of the hill, a project funded from another source but conducted by the same archaeologists (Reich, 2011, pp. 153–63). While the finds were handled according to professional, archaeological standards, the excavations were to be the first in the longest ongoing series of excavations ever to be conducted in Jerusalem. What is new with these and the subsequent excavations, as I will discuss in the following, is that presentation of the site to the public, once the salvage projects were concluded, have been left completely in the hands of El'ad.

El'ad now manages the entire site of the City of David for the public and promotes its antiquities in packages that can be booked online. Previously public paths and recreational spots are no longer open and free to the public (Dudinski, 2008; Greenberg, 2009). The site, which one enters through the Visitor's Center to the west, located higher up on the hill, has been developed into a complex of offices with a visitor's center, and the archaeological site that has become a tourist attraction with guided tours, films, an educational center, etc. Further, video tours and lectures are available on YouTube catering in particular to groups such as Israeli soldiers "so they can know what they are fighting for," Jewish tourists and Evangelical Christians, for whom remains from ancient Israel are proof of the Bible and Jewish history, and to whom the presentation of Bronze Age fortifications as stemming from "the time of Abraham" makes these old stones come alive in a particularly significant way (https://www.youtube.com/watch?v=SFdELRNo9_k; https://www.youtube.com/watch?v=5FHgEq2j20c; https://www.you tube.com/watch?v=YTdKznTA9iY). The tours go through the underground water channel systems, evoking the Israelite king Hezekiah and his victory over the Assyrians (2 Kings 18–20). Public areas, such as walkways and open areas that had previously been used by all residents of the area have been incorporated into the site and are now off limits to local residents. The Gihon Spring, which had been a place of relaxation and play for locals, has also become off limits, incorporated into the tourist site with an admission fee. The perspective from which the site and remains are presented is almost exclusively one that focuses on the biblical periods, and that ignores and does not acknowledge the present complex context of the location.

The cooperation between El'ad, the Jerusalem District Planning and Construction Committee (the East Jerusalem authority for urban planning), the Israel Nature and Parks Authority, and the IAA, has continued to expand, and has brought with it an increasingly troubling set of issues. I will give examples that illustrate the acute dilemmas being posed to heritage management in this case.

The Givati Parking Lot with Visitor's Center (Kedem Center)

In 1970, municipal authorities had built a parking lot for visitors to the Old City on land expropriated from its owners by the municipality for public use. In 2002, parts of this property were transferred to a subsidiary of El'ad. At the same time there occurred a change in the IAA's tone toward El'ad's project of building a multipurpose parking garage and visitor's center. Whereas the IAA had categorically opposed El'ad's plan for 200 housing units in 1997, also opposing giving El'ad the responsibility for taking care of the City of David excavations, citing the association's damage to antiquities, this deep skepticism was now replaced by interest (Greenberg, 2014, p. 6–7). There was also a change of directors and a non-archaeologist became head of the IAA in 2002, when Shuka Dorfman replaced Amir Drori (Dorfman died in 2014).

In 2003, salvage excavations began, going just deep enough to fit the plans for El'ad's parking garage. Layers of remains were removed. In 2005–06, a new Town Planning Scheme for construction was now supported by the IAA, in spite of the area's status as a no-construction zone. Excavations were renewed in 2007. In 2008, local residents and the Israeli left-leaning yet Zionist organization Peace Now petitioned the High Court against the building plans. By this time, the IAA and El'ad were working as partners. The Court ruled in favor of the plan, based on information provided by the IAA, in which the IAA withheld the fact that they knew that construction would take place. Further, in 2008, the plan for a parking garage was replaced by a plan for a seven-story building and a parking garage. At first, IAA was surprised, but soon they warmed to it, the director even adding: "We are constructing a modern architectural layer." "We," suggest the writers of the report, are the IAA and El'ad, working hand in hand (Greenberg, 2014, p. 20).

In documents from these years which were studied by archaeologists affiliated with Emek Shaveh, a non-governmental organization of independent archaeologists and community activists, it becomes clear that El'ad's agenda is to complete the construction of the building, and that many excavation and conservation issues were disregarded and common policy and principles not heeded. Important remains, such as the discovery of Jewish and Muslim graves, perhaps from the Fatimid Period or Abbasid period (perhaps Karaite Jews), indicating a mixed population, and Byzantine and Roman period finds, were removed in order to reach the levels of the Second Temple and biblical periods, without proper documentation (Greenberg, 2014, chap. 3). These finds have a huge potential for an inclusive approach to preservation and presentation, in ways that would take into account the complex and multi-faceted history of the site through its various periods. A comprehensive comparative study of earlier excavations at the site would also contribute to such an approach (Crowfoot's and Kenyon's, see above). However, there were no such plans for conservation and presentation to the public, except the agreement that El'ad

would be responsible and not the IAA. This is tantamount to a complete abdication of archaeological and conservation principles (Kreimer, 2011).

In 2012, the Nature and Parks Authority approved the construction of the new visitor's center (Hasson, 2012). El'ad had received the support of Jerusalem Mayor Nir Barakat, who spoke in its favor to the Planning Committee. The IAA was also in favor, in spite of some of the previous disputes over methods and interpretation. Opposed were Emek Shaveh, the Israeli human rights organization B'Tselem, international and independent archaeologists, as well as the local Palestinian residents, who see the building of the new center and parking lot as disruptive and as something that further isolates the Jewish history from the present surroundings.

The presentation of the site by El'ad seems directed by its agenda to connect it to a national, historical, quasi-religious story, in order to support its settlement ideology (on such an agenda, with statements by El'ad director Doron Spielman, see Dudinski, 2008). The Israeli non-profit organization Ir Amin, along with Israeli archaeologists critical of El'ad's ideological heritage management, tried unsuccessfully in 2011 to petition the courts to turn the management back to the public. Lobbied by settlers and with the prospect of powerful donor funding, the government pushed through a bill allowing the outsourcing of the management of national parks to private organizations, (Kreimer, 2011; for more on El'ad's ideological site management, see Greenberg, 2009b; Futterman, 2013; B'Tselem, 2014).

Further, the projected and already illegally dug tunnel connecting the Givati Parking Lot to the Mughrabi Gate is another piece in the project that is deeply troubling. The tunnel was begun without permits but was eventually approved by the IAA, even though it goes against archaeological practice by excavating horizontally, and has achieved little in the form of archaeological results.

For custodians of heritage, the situation here is fraught with issues as basic as excavating inhabited areas, to the privatization of heritage management, and the increasing dependence of government bodies responsible for public areas and a shared heritage on private actors with specific agendas and private donors, with no requirement for government oversight (Greenberg, 2014, pp. 45–9). El'ad receives public funding also, through budget funds for its role as caretaker of the City of David Archaeological Site, and pays the IAA for the contracted excavations. It seems that while the IAA's archaeologists, settlers, and Israeli authorities are each benefiting from their shared interest in the City of David, they are also able to blame each other for problems and illegalities, or to ignore responsibilities. Their cooperation seems to be more incidental than planned, at least initially. But it is clear that the development has worked in favor of El'ad's agenda, and that El'ad's has fully embraced archaeology and heritage construction as primary methods in order to achieve its goals. On the other hand, while IAA archaeologists may not always agree with the way in which the site is presented by El'ad, they have depended on El'ad for funding and contracts, and have accepted the present status. In the words of Raphael Greenberg, an archaeologist who worked on Shiloh's excavation (1978–85) and knows the City of David intimately:

> IAA has completed nearly 15 years of continuous excavation in the "City of David," virtually all of it requested and funded by El'ad, which has become the defacto planning authority for the Wadi Hilweh neighbourhood of Silwan. And, while the conduct of the excavations themselves has been left largely to the discretion of the excavators though time constraints and research priorities have been affected by the agenda of the developers, the presentation of the finds to the public—including venues such as semi-academic conferences in which IAA excavators play a crucial role—has been left to El'ad in a manner that I have described at length elsewhere (Greenberg, 2009a, p. 275).

And, perhaps even more damning:

> At the time of writing of this paper, the pretence [sic] of a disinterested, 'apolitical' archaeology can, it seems, no longer be maintained. Using a local catchphrase, the IAA excavators are increasingly exposed as 'the Messiah's donkey' for the ideological national-religious right, (Greenberg, 2009a, p. 277).

A different example of troubling archaeological presentation are the findings of Eilat Mazar, who claimed to have found the palace of King David during a privately funded project in 2005 (Mazar 2009; Mazar 2011). Now the structure is referred to as the Large Stone Structure, since it has generated controversy (Finkelstein, 2007). While Mazar's discoveries seemed at first to have served the El'ad agenda of presenting the site as closely connected to a biblical "golden age," she has subsequently publically criticized El'ad for presenting what is most likely a Second Temple period *miqveh* as "Jeremiah's Pit," which is a reference to the well that the prophet Jeremiah is to have been thrown into. The implication is that El'ad is exploiting this for tourism purposes, where biblical names such as Jeremiah, Hezekiah, and King David and Solomon, provide a deep sense of identification for Christian tourists from abroad (Hasson, 2011). There is indication that the controversy over the so-called palace of King David either is, or is being deflected as, an example of infighting among archaeologists. However, it does showcase the convoluted relationship between archaeologists and El'ad, working seemingly together for mutual benefit, albeit sometimes toward disparate ends.

The King's Garden/Bustan

Another example of the collusion (or coinciding of interests) between El'ad, the municipality of Jerusalem, and the National Nature and Parks Authority is a proposal to build an archaeological park (The King's Garden, Hebrew *Gan Hamelech*) in the neighborhood known as al-Bustan. This is an area on the plain in the bottom of the Kidron valley, consisting of illegally built homes (since it is almost impossible to obtain permits for building in East Jerusalem). The proposal has not yet been finalized or put into effect, but remains a part of the larger plan for archaeological parks surrounding Jerusalem. The municipality of Jerusalem supports the plan in order to promote tourism, and has promised the residents better

housing (Teibel, 2010). However, considering the many ways in which Palestinian residential development in East Jerusalem has been limited and prevented over the past several decades, this promise rings hollow (Hodgkins, 1996).

The general ethical issue here is how to deal with existing populations when wanting to preserve archaeological remains. In most cases, the existing population and its culture come first. Although there are plenty of examples of relocating populations in the face of archaeological projects and heritage management—such as Petra in Jordan and Angkor Wat in Cambodia—the Bustan case is at its root political (Massad, 2001; Luco, 2013). The removal and control of Palestinian populations in Jerusalem and the West Bank under the guise of heritage management and memorial building that privileges Jewish history and culture has taken place in the past and is presently continuing (the Mughrabi quarter in the Old City and Nebi Samwil/the tomb of the prophet Samuel are examples [Abowd, 2000; Greenberg & Keinan, 2013]). Most recently, Israeli authorities have announced the decision to evict the West Bank village of Susiya in order to establish an archaeological heritage site there (https://www.ochaopt.org/documents/ocha_opt_susiya_factsheet_may_2015_english.pdf; http://www.btselem.org/press_releases/20150507_khirbet_susiya_facing_expulsion).

Archaeological Parks

The City of David site is part of a much larger system of Archaeological Park areas that surrounds the Old City of Jerusalem on three sides: the south, west, and east. The park areas connect to the northeast of the Old City, to the Rockefeller Museum complex, which houses the IAA, and from there to further "park" areas being developed to the north toward Mount Scopus and on the eastern slope of the ridge to its south. The system of Archaeological Parks is motivated by Israeli national concerns beyond heritage management, and is deeply connected to issues of geographic contiguity and territorial sovereignty (B'Tselem, 2014; Dumper, 2014). This reminds us that the overarching context of Israeli archaeology in East Jerusalem, however complex and convoluted, is the Israeli occupation. As such, all the institutions and legal frameworks that govern archaeology in East Jerusalem are implicated in this situation of unresolved occupation and can therefore not be politically neutral.

Hegemonic Conservation

The hegemony that El'ad has over the City of David site suggests that the presentation of the site to visitors, whether actual or through electronic and social media, is "filtered" and only certain archaeological remains are displayed. The presentation favors King David and ancient Israelite history, with the ideological prominence of Jerusalem that this period signifies, and the first century C.E. Jewish wars against the Romans, and the Roman destruction of the Second Temple. Ironically, finds from the "time of David" are quite scarce at the site. Furthermore, the history of Jerusalem in the late Roman, Byzantine, and Muslim periods have just as much potential to be vividly brought to life through findings at the City of David; however, these periods are not presented to visitors. A visitor would not know about the history of these periods from any of the tours available (http://www.cityofdavid.org.il/en/tours/city-david/city-david-tours-biblical-jerusalem). It thus becomes clear that the presentation is geared toward connecting the site to its biblical and Jewish history and to have it come alive as an illustration of this history, rather than to let the remains that have been excavated tell its multilayered story of different cultures and different time periods. El'ad's presentation of the site privileges one history, and does not give room for the different groups and people who have a connection to the site, including its current Palestinian inhabitants.

Alternatives

Alternatives to the current "hijacking" of site management should be obvious to anyone, but implementation is the hurdle. There are calls for the fostering of an inclusive approach that acknowledges different, competing, and shared narratives; a critical approach that acknowledges the power of archaeology to shape present identities.

One example of such an open, inclusive approach is an interactive map of all archaeological sites in the West Bank and Jerusalem, which has been prepared by a group of international, Israeli and Palestinian archaeologists and presented at the University of Southern California. This project has been ongoing since 2005, and can be found at http://digitallibrary.usc.edu/cdm/landingpage/collection/p15799coll74.

Another part of this initiative includes the non-governmental Palestinian-Israeli Draft Agreement on Archaeological Heritage (available on the USC website, http://www.usc.edu/dept/LAS/arc/sh/agreement.pdf), concluded in 2009, which put forward the following recommendations:

- Ancient sites should be treated equally regardless of their period of occupation or of any religious, ethnic, national or cultural affiliation.
- Archaeological sites should be accessible to the public without discrimination.
- Prohibiting the destruction of archaeological sites due to their religious or cultural affiliations.
- Both sides are strongly encouraged to form a bilateral, professional committee in order to consult on cultural heritage issues of joint interest.

A group of archaeologists have advocated freezing archaeological excavation in Jerusalem for the time being, an action that would defer some of the challenges to a later time when the political situation is more equitable.

These principles, combined with methods of community-based preservation and conservation would be the ideal situation; however, reality is grimmer. The IAA has become even more politicized in recent years, and in 2014 the government appointed as its new director Israel Hasson, a politician from the centrist party Kadima, who has ties to El'ad, and who is a former deputy director of Shin Bet (the Israeli security service). Meanwhile, at the moment of writing, the latest news is that in spite of hearing objections from local Palestinian residents and the appeals of Emek Shaveh, Israeli courts have approved the plans for the Givati Parking Lot and

Kedem Center. One of the arguments to proceed was justified by the fact that the center will show "important archaeological discoveries to the public," (Eisenbud, 2015a). At this point (June 2015) a somewhat scaled down version of the original plans have been approved, but even this will be contested by El'ad, who has found that one committee member had a conflict of interest (Eisenbud, 2015b). For now the ideologues with their ulterior agendas and their subcontractors win (Kate, 2014; Emek Shaveh, 2015).

> Who controls the past,
> controls the future.
> Who controls the present,
> controls the past.
>
> – George Orwell

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Cultural Racketeering in Egypt—Predicting Patterns in Illicit Activity: Quantitative Tools of the 21st-Century Archaeologist

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Abstract

The Arab Spring uprisings of 2011 facilitated social movements that redefined the modern world. These uprisings also served as the catalyst for cultural racketeering, or the systematic theft of art and antiquities by organized criminal syndicates. Although the widespread looting and destruction of sites is well known, it is not extensively documented. There are few detailed numbers on cultural racketeering in Egypt, and many of the numbers that do exist fail to critically examine the issue at large. However, the range of updates that stream from news reports and social media on the continuous looting and destruction of heritage in Egypt since the 2011 revolution has provided a new look at a measureable pattern of illicit heritage crimes. Media and social media reports of heritage threats in Egypt were collected over a three year period and dissected to extract the credible information and demographics that each contained. The data was then graphed and analyzed for patterns. The graphic analysis demonstrated that both individuals and groups seeking to steal Egypt's cultural patrimony are not selective or prone to single attacks; they undertake their efforts repeatedly and at a variety of places with clear evidence of recurring patterns and cycles.

Studying these reports provides a route for researchers to reconcile the lack of traditional data covering huge areas of land. Examining all of the available information on heritage crimes to determine patterns is a critical element in identifying the stage of progress these crimes have reached so that the appropriate course of action can be taken to thwart criminal efforts before the scale of the geographic reach widens or increases in volume. The post-Arab Spring archaeologists of the twenty-first century must be investigators of the present as well as the past by navigating technology, politics, security, and economy in order to protect heritage.

Introduction

Threats to cultural heritage are common the world over. They do not only affect nations in crisis, developed and undeveloped nations alike are afflicted with threats to both modern and ancient history. Looting does not discriminate among nation, ethnicity, religion, or politics. Indeed, heritage crimes are one of the largest areas of study to be undertaken with so little data to fall back on, and it will be years before we have a clear picture of the greater international issue. A comprehensive understanding of heritage issues could be more easily achieved through the use of an established framework or pattern to examine the data currently available to us. As the archaeological world seemed to be paralyzed by the Arab Spring turmoil, Emma Cunliffe of Durham University, revealed the value of technology in continuing to effectively work toward preservation even away from the trenches and baulks (Cunliffe, 2012).

Heritage crimes across the world take a number of different forms: socio-cultural/political destruction or cultural cleansing (Mali, Afghanistan, Iraq, Egypt) (Baker, Ismael, & Ismael, 2010); illegal excavation carried out by individuals as well as at the gang and mafia level; criminally organized looting on an industrial scale like that carried out by gangs and mafia, also known as cultural racketeering (Lehr, 2013); damage and looting of heritage sites as a result of land encroachment for development, agriculture, or squatting (India, Bolivia, Egypt, and dozens of other nations worldwide); and museum and facility looting (Iraq, Afghanistan, Greece, Egypt). Despite the evidence for these heritage crimes, there are few numbers that exist on the overall scale of looting and encroachment in Egypt, the region, or internationally. Many of the numbers that do exist are either outdated or based on estimates or customs seizures rather than examining the issue at large.

Despite the range of threats to heritage and nations facing heritage crises, Egypt was specifically chosen as the subject of this study because of its unique position of being one of the few nations that is exposed to all of these threats simultaneously. In addition, the timing of the crisis that caused the security breakdown, serving as the catalyst for the heritage crimes, correlates with the culmination of increasing usage and connectivity in communications and social media technology, which was coincidently one of the driving forces behind the revolution itself. The same tools that gave voice to the revolutionaries in Egypt also gave a voice to heritage advocates and archaeologists across the country as they scrambled to confirm the status of heritage sites and artifacts across the country.

Illicit antiquities trafficking—or cultural racketeering—is like a virus. It infects a particular population and as news circulate of the riches available in archaeological finds, the virus spreads. As opportunistic looting began developing across the MENA region following the 2011 Arab Spring uprisings, what began as a local gang trade in many regions gave way to industrialized antiquities trafficking operations.

Understanding the problems of cultural racketeering and cultural cleansing goes beyond the scope of archaeology alone. It is necessary to understand the characteristics of the issue at hand within the greater environment—is it an issue of cultural racketeering, cultural cleansing, encroachment, or something else altogether?

During periods of conflict and crisis, heritage cannot afford to wait. By examining information that comes out of events

in real time—heritage experts may be able to work with governments to explore potential patterns in looting activity.

Challenges of Information Reporting and Analysis in a Global Recession

Since the outbreak of the global recession, the academic community—and in particular social sciences and humanities—have seen a massive cut in funding on the federal level. Congressional cuts, along with the across-the-board reductions known as sequestration, from 2010 to 2013 resulted in the largest overall decrease in a three-year period since the end of the space race (Jhanke, 2015). In fact, during the Arab Spring and post-Arab Spring years, which have been some of the most crucial years for needed social sciences research, federal funding in these areas was at one of its lowest points.

Working and researching in an area that is already underfunded creates new obstacles in the examination of the post-Arab Spring world. The rapidly shifting socio-political dynamics of the Middle East and North African regions in the months and years following January of 2011 required immediate tracking and response to gain an understanding of the ground situation at any given time. Thus, the typical process of seeking out and applying for a grant in order to conduct vital research leaves crucial time gaps during period of conflict and turmoil when information collection and analysis is needed on a nearly daily basis.

To seek out vital information during periods of rapidly moving crises we turn to the Arab Spring uprisings. The same force driving the organized protests during the revolutions of the MENA region also proved to be a vital source of information in tracking and understanding the Arab Spring on a daily basis: social media. The Arab Spring protestors benefited from the free nature of social media, and even when the government banned Internet access, social media organizations such as Twitter made information sharing and reporting available by creating a voice-to-tweet feature in order to bypass the Internet blackout (Arthur, 2011).

Aside from its obvious values in terms of globalization and connectivity, social media also provides information that is available for free—all that is needed is an internet connection. The lower costs of reporting and organizing in real time have major benefits to less financially adept communities in the uprisings (Tufekci, 2013). Additionally, when operating in an atmosphere with a continually shifting plethora of information while facing a dearth of funding, availability of reliable and free information is not only valuable, but also necessary for gaining an understanding of ground dynamics as well as patterns of criminal activity in the various crises related to the Arab Spring. This study examines the patterns related to the state of post-Arab Spring cultural heritage in Egypt.

Social Media as a Tool

One of the most important aspects of social media technologies is that for the first time in history we are able to track a heritage crisis in real time as it is happening and capture it forever in the archives of the internet for free. The range of updates that have streamed from news reports and social media on the continuous looting and destruction of heritage in Egypt since the phenomenon exploded in January 2011 has provided a measureable pattern of illicit heritage crimes to be examined. This study attempts to gain some measurements from the heritage incidents in an effort to identify the primary sources and process of looting progression in Egypt. In addition, an examination of potential patterns in looting progression using a combination of the Egypt-focused news and social media reports alongside archival media research will explore the possibilities of a framework through which to examine other crisis-driven heritage crimes around the world.

The incorporation of social media as a tool for data collection had a two-fold purpose. First, it allowed for nearly instant updates from some of the world's foremost Egyptologists on the status of sites and museums as chaos was unfolding during the revolution. Second, the examination of social media allowed for a first time look at the counter-culture evolving to combat the heritage threats in Egypt that have sharply risen in the post-revolution years.

The timing of this massive spread of counter-culture efforts would appear to be a byproduct of the Arab Spring alone, but in fact it results from a combination of the following: the increased technological development and access per capita that has resulted from globalization; the greater infiltration of a new generation of technology into the academic sphere both within Egypt and abroad; and perhaps most importantly, an international perspective that has shifted toward a greater concern for heritage as a result of decades of lessons learned from both our world's distant and not so distant wars; and of course the Arab Spring. For example, a Pew study released in February 2014 showed that among Internet users in developing and emerging economies, Egypt has the highest percentage of Internet and smartphone users on social media. Of those Egyptians connected online, 88% of them use social media and 82% of users are online daily (Pew Research Center, 2014).

The archaeological community's international mobilization via social media created a constant stream of communication across time zones. Whereas during previous wars (such as Iraq or Afghanistan) it would take days or months to understand the extent of the museum damage based on publically available information, the use of social media created an atmosphere where updates on the status of the looting of the Egyptian National Museum left only minutes and sometimes seconds between reports. Those communicating used the cross confirmation of reports to dispel rumors and remain focused on the facts.

This continuous stream of communication through social media networks and available media reports provided an opportunity for social scientists to track and analyze information in real time. The great conundrum in the issue of heritage threats is that for governments to change policy in favor of greater heritage protection, concrete evidence and measurable numbers are needed. Unfortunately for the heritage community, the numbers on antiquities trafficking are few and far between, and measuring these types of numbers often takes months or years of research. However, providing a real time resource grants researchers an opportunity to understand phenomena as they occur rather than backtrack to source information.

The early timelines of the most prominent social media groups, namely Facebook Groups and Pages, were filled with a flurry of activity and user comments and posts, but as the cause lost momentum. The ongoing reporting commentary remained centralized around Egyptology but did not just focus on looting-related discussions, it included political commentary and updates as well as general information about new discoveries. Some discussions were somewhat confrontational between individuals. Regardless of the cause, the drive for protection of antiquities took a less public seat in social media as time went on. Social media not only gives insight into the matter of information being communicated in the archaeological community during times of heritage crisis, but it also gives insight into the communication patterns of the academic community.

Although the reports are only a sample of what is happening on the ground, much like a political poll represents a sample of the population, the increasing frequencies of these accounts appearing online are an accurate measure of the general state of cultural heritage in Egypt.

Understanding Landscapes: Economic, Political, Social and Criminal

In analyzing the conditions present within the environment, we must consider both the physical and socio-political landscape of an area of interest. Often times navigating these landscapes will point to the catalyst of the crisis, or to the event that served to acceleration of heritage trafficking or destruction. Gaining an overview of the resources available to the area in peril will be necessary in determining the types of efforts needed moving forward.

Often when a crisis takes place, the government and its available resources are occupied with high-level security issues—or in some cases, the complete reformation of government (CNN, 2011). Both issues occupied Egypt's government during the 2011 revolution. Unfortunately, in any case, cultural heritage ranks low on the list of government and security priorities. It is up to heritage advocates and experts in the academic community to provide governments with information to raise the profile of heritage as a priority security issue even though gathering this information in a timely manner can prove to be a challenge.

One of the unique and inspiring points of the Arab Spring was the rallying of civil society where government resources were absent. When the Egyptian National Museum in Tahrir Square was under threat of looting, young people protesting in the square linked arms in an effort to protect it while yelling, "This is not Baghdad" from the crowd. But citizens cannot stand guard at museums and sites forever.

After the January 2011 revolution and the breakdown of security that followed, tourism in Egypt plummeted. How does this affect heritage? In Egypt, the Ministry of Antiquities, which is tasked with the protection and maintenance of Egypt's sites and museums, was thus denied crucial funds when they were needed most. The revenue generated from ticket sales at heritage sites funds the Ministry of Antiquities, leaving the ministry, as well as its ability to provide protection for heritage sites, vulnerable.

The social, economic, and political circumstances at any given time can have a significant impact on the patterns occurring in the realm of heritage threats, as will be discussed later. However, tracking and understanding the various shifts in socio-political and economic landscapes is necessary to assessing and predicting pattern shifts.

Methodology and Data Sources

The information for the charts compiled for this analysis was derived from a combination of international news and media reports, blogs, as well as firsthand accounts and on-the-ground reports from archaeologists and Egyptologists who organized through social media on Facebook and Twitter. The most prominent use of social media was organization via Facebook where the looting of the National Museum served as the catalyst.

Based on the few official government reports on the progression of the looting, the numbers exhibited within this project are simply a sample of the wider phenomena of heritage crimes taking place across Egypt and the region. The numbers in these graphs are based on single sites, nearly all of which have been looted, illegally excavated, encroached upon or otherwise damaged either continuously, or several times over the course of the years since the 2011 revolution.

This method of research and analysis will not yield complete numbers on the amount of material moved, number of sites looted, or value of antiquities lost. It is only a snap shot of the patterns within the larger looting picture. A comprehensive look at the numbers will require field surveys, artifact registration and database entry, as well as a thorough assessment of missing and damaged objects from the decades old storage facilities throughout the country, not to mention a complete quantifying of all of the illicit excavations throughout the country in "virgin" excavating territory.

The data assignment for each of the categories under "demographic" and "location" graphs is based on what was explicitly described or mentioned in reports or social media. The data assignment for the categories under "classification of heritage incidents" is based on analysis from both the "demographic" and "location" data as well as any additional detailed information on each of the incidents that was not graphed in the charts for this project. No assumptions were made in any of the analysis of social media and media reports. All data and information presented in reports was broken down to suit each category, if information was not available, it was represented as such in the graphs.

Location Classification: Patterns of the Places Affected

A month-by-month breakdown from January 2011 to December 2013 revealed clear patterns in the number of reports referencing specific classification of areas facing heritage threats over the three-year period following the January 2011 revolution (Figs. 1–5).

A pattern emerged indicating a spike in heritage incidents taking place at sites (as opposed to museums or facilities) during the months of March and was consistent over the course of the three years studied. The classification for 'sites' refers to a specific archaeological site (e.g., temple, ancient

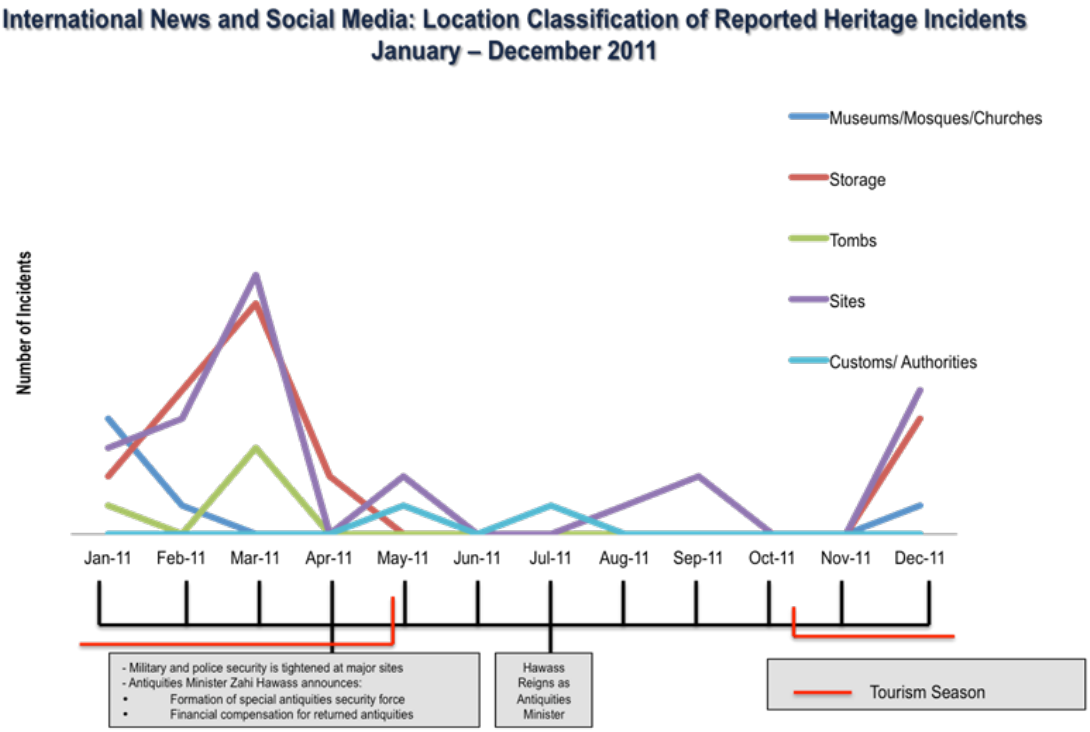

Figure 1: Data from international news and social media reports classified by incident location reported from January 2011 through December 2

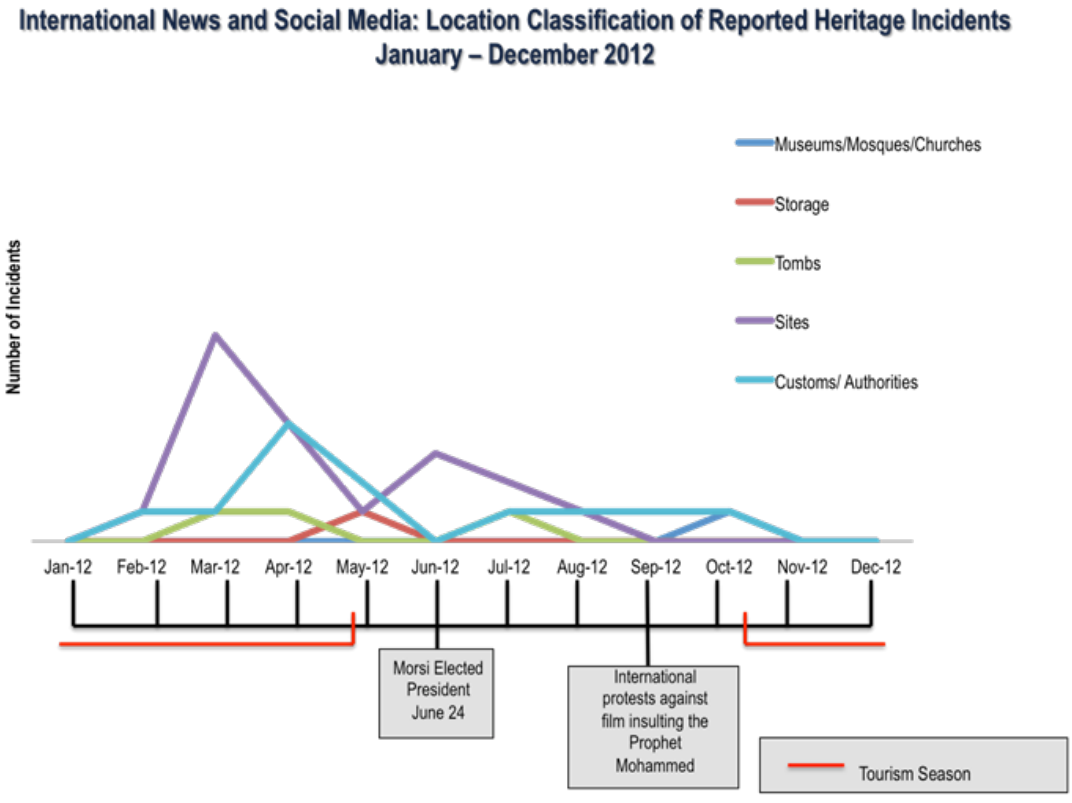

Figure 2: Data from international news and social media reports classified by incident location reported from January 2012 through December 2012.

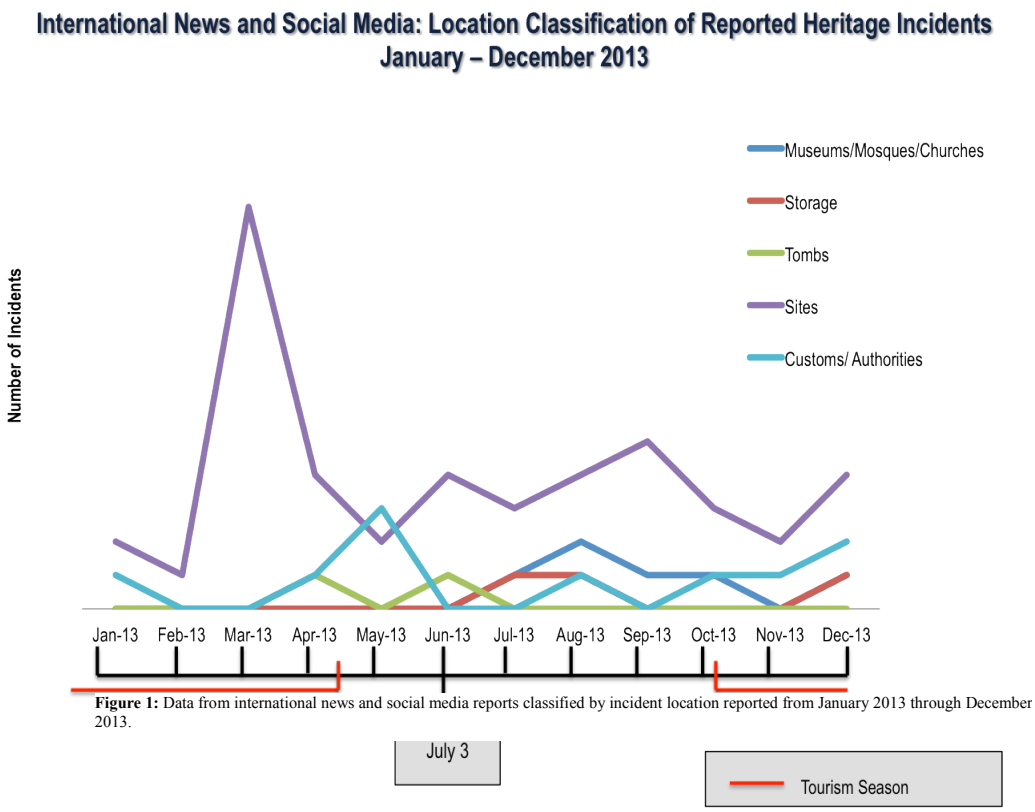

Figure 1: Data from international news and social media reports classified by incident location reported from January 2013 through December 2013.

Figure 3: Data from international news and social media reports classified by incident location reported from January 2013 through December 2013.

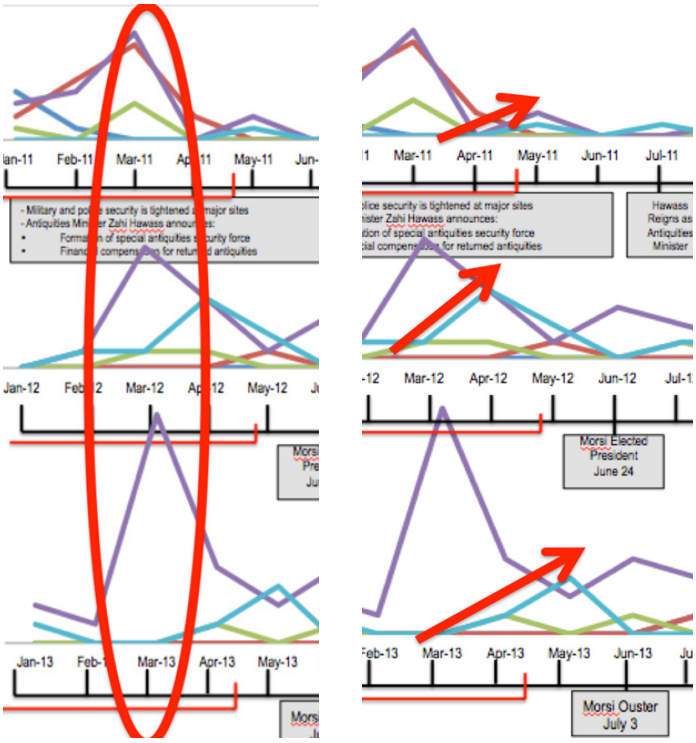

Figure 4 [Left]: Increased heritage threats and criminal activity appear consistently in the month of March in post-revolution Egypt.; Figure 5 [Right]: Increased smuggling incidents and activity at customs points appears consistently between March and May in post-revolution Egypt.

city) or to a general archaeological region (e.g., the Fayoum or the Delta).

There are several potential reasons to surmise why the month of March would correlate with an increase in looting or criminal heritage activity at archaeological sites. One explanation for this could be the favorable weather between the months of November and April. Incidentally, this is also one of the reasons why these months are typically popular during tourist season. Taking into consideration the typical months of Egypt's tourism season indicates another potential reason for increased activity during these months, which could result from the significantly decreased presence at sites due to the major drops in tourist attendance after 2011. A lack of tourist presence at sites paired with minimal resources for site protection makes sites an easy target during the months with the mildest digging climate.

An additional pattern emerged when examining the monthly breakdown of location classification reports with concern to locations classified as customs/authorities label. This description is used to reference any illicit antiquities already smuggled outside of the country and captured or seized, or those recovered in transit on the "underground smuggling network."

Following the spike at site incidents in March, we see a repetition of increased incidents involving customs officials between March and May, typically in the month of April. The increase in sites affected is followed by a rise in incidents occurring at customs points.

Heritage Incident Classification: Patterns and Processes of Types of Crimes Committed

When taking into consideration the sociopolitical environment during major events in Egypt and throughout the Arab World, we are able to determine several additional patterns. For instance, during several major political events that led to acceleration in looting, there is initially a high rate of looting at locations classified as museums, mosques or churches. In fact, each year from 2011–13 the highest rate of occurrences at museums, mosques or churches occurred immediately following a political event that served as a crisis catalyst. Additionally, storage facilities serve as a secondary target that are at higher risk of looting around periods of political turmoil or instability (Figs. 6–9).

At the beginning of the 2011 revolution, the social media and media reports regarding heritage incidents involving facilities looting (primarily museums and storage facilities) as well as site looting had increased. Why museums and storage

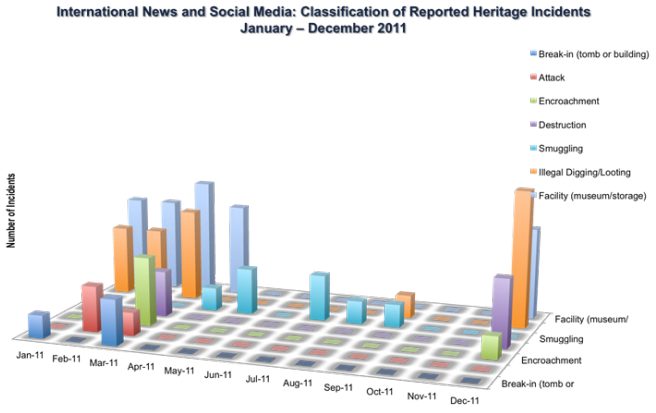

Figure 6: Data from international news and social media reports classified by incident reported from January 2011 through December 2011.

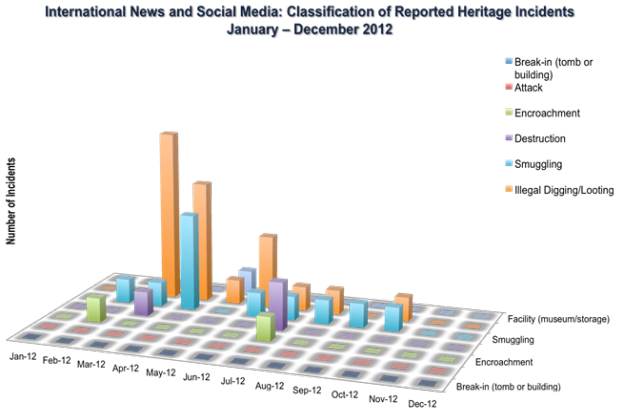

Figure 7: Data from international news and social media reports classified by incident reported from January 2012 through December 2012.

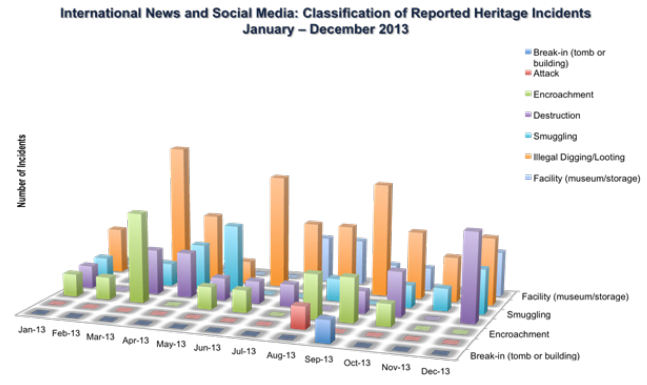

Figure 8: Data from international news and social media reports classified by incident reported from January 2013 through December 2013.

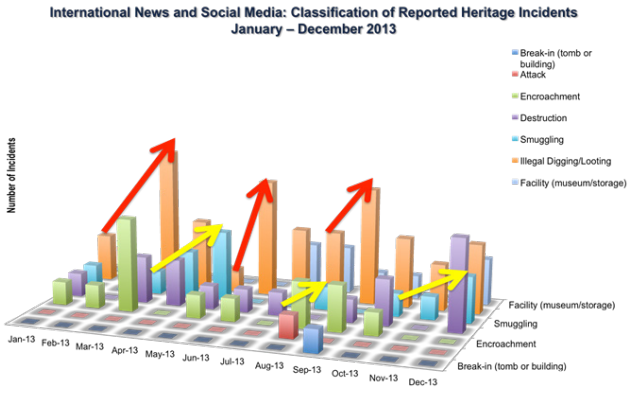

Figure 9: High periods of incidents classified as smuggling nearly always followed high periods of incidents of illegal digging.

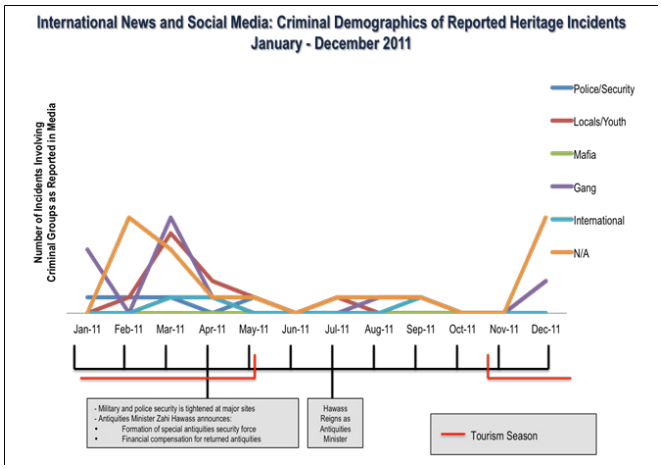

Figure 10: Data from international news and social media reports classified by criminal demographics from January 2011 through December 2011.

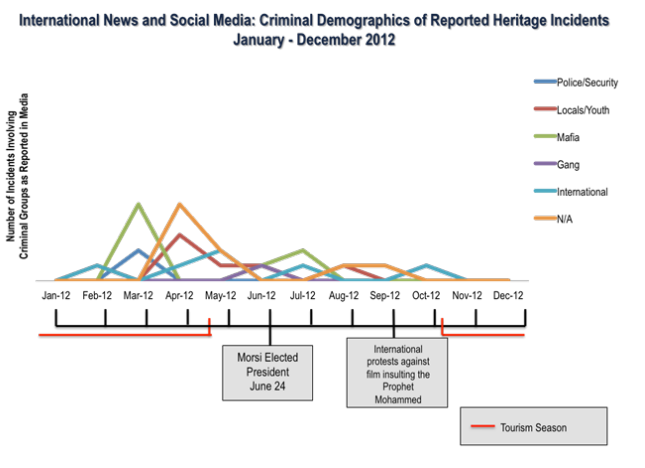

Figure 11: Data from international news and social media reports classified by criminal demographics from January 2012 through December 2012.

facilities? One possible reason for these areas as the initial attempt at looting could be due to the fact that these are known soft targets—there are caches of potentially valuable artifacts that can be looted and moved in a shorter amount of time with less effort than typical site looting. Additionally, minimalized security allowed for opportunists to take advantage of these soft targets.

Activity around smuggling incidents rises in the months following the high rates of looting and attacks on facilities and sites. Incidents of illegal digging are highest in March while highest incidents of smuggling appear in April, which are consistent with the patterns exhibited in the location classification breakdown.

The breakdown in 2013 shows a well-established pattern of rises in illegal digging followed by increases in reports involving smuggling. This could mean that the networks that are involved in looting and smuggling do not have the manpower to engage in both phases of the trafficking cycle at the same time.

If we are able to predict the periods or intervals when particular incidents will arrive, we can help nations such as Egypt, which are grappling for security resources for heritage, to use their resources most effectively.

Demographics: Patterns of the People Involved

The three years studied revealed that several different demographics were involved in the heritage crimes recorded, ranging from individuals, to organized groups, to well-established criminal networks. (See Figs. 10–12).

An examination of the key groups in 2011 exhibits that locals, youth, and more generally gangs—organized groups with no known connections to existing criminal networks—represented a major portion of the looters' demographics in the early months following the revolutions. Locals/Youth in this context refers to recorded incidents where perpetrators of heritage crimes or those involved include local residents from the immediate area around a site or facility, or groups of locals specifically described as youths. None of the recorded

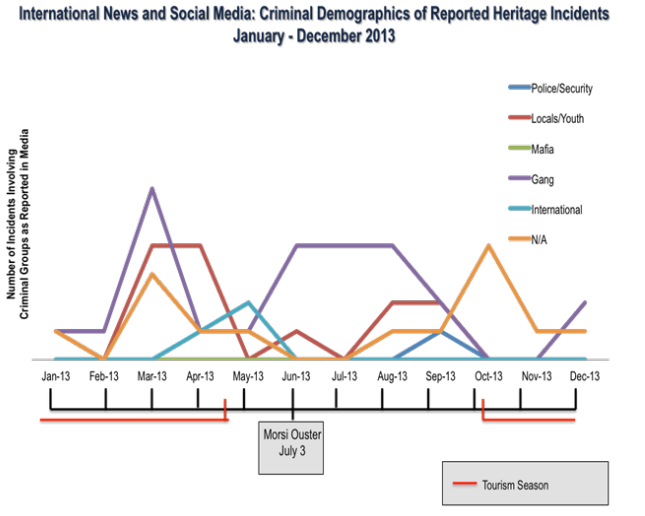

Figure 12: Data from international news and social media reports classified by criminal demographics from January 2013 through December 2013.

incidents in international media or social media described youths committing heritage crimes that were not local to the site or facility in question.

References to mafia, which typically refers to more organized and wider-reaching criminal groups, do not appear until early 2012. Additionally, these demographics correspond with the spikes in site looting as well as increases in smuggling or customs related incidents in the spring months, particularly around March.

In 2013, the number of "international" individuals increases, corresponding with the rise in smuggling related cases at that same time (As indicated by the site classification graphs).

During a period of turmoil global and regional crimes follow an evolutionary path both in the sense of industry growth as well as in the development of the hierarchy of geographic reach and wealth. This principle also holds true to heritage crimes and the black market industry in illicit antiquities. The

greater the international involvement, the further developed the black market industry.

Organized crime has become transnational and international, as groups form alliances wherever or with whomever they need to achieve power and wealth. It has become a global enterprise and is so intermingled in the socioeconomic and political process that it is difficult to separate these entities (Mallory, 2012).

Examining the available information on heritage crimes to determine patterns is a critical element in assessing how these crimes have progressed. This will allow us to take the appropriate course of action to thwart criminal efforts before their geographic reach widens or increases in volume.

Conclusions

For the first time in history, we are able to track a heritage crisis in real time. The range of updates that stream from news reports and social media on the continuous looting and destruction of heritage in Egypt since the revolution in 2011 has provided for the first time a measureable pattern of illicit heritage crimes.

By graphing the reports on a month-by-month basis we are able to see that particular months favor particular activities related to cultural racketeering—such as the high rate of site looting activity occurring annually in March, and the increase in smuggling activity in April, following the site looting spike.

The patterns thus far demonstrate that both individuals and groups seeking to steal Egypt's cultural patrimony are not selective; they undertake their efforts repeatedly and at a variety of places. Sites suffered most in the early months of the Revolution and continue to be the primary targets in 2013. Gangs, locals, and youths have taken a larger role in looting and illicit trade as time has gone on.

The breakdown in 2013 clearly shows a well-established pattern of rises in illegal digging followed by increases in reports involving smuggling. This could mean that the networks that are involved in looting and smuggling do not have the manpower to engage in both phases of the trafficking cycle at the same time. If we are able to predict the periods or intervals when particular incidents will arrive, we can help nations such as Egypt, which are grappling for security resources for heritage, to use their resources most effectively.

The overall scale of heritage crime in Egypt continues to rise. Illicit digging and looting, which dropped off in the second half of 2012, skyrocketed in 2013. In fact, the graphic analysis shows that nearly every category of heritage incident rose from 2012 to 2013.

The majority of steep spikes in any type of heritage event in Egypt appear to be marked by a major political shift or period of turmoil—a "crisis catalyst." These crisis catalysts include the January 2011 Revolution, the ouster of Mohamed Morsi, and the protests and turmoil surrounding the film depicting the Prophet Mohammed. However, what several of these patterns show is that much of the activity is cyclical—and thus knowing what to expect when a major conflict or crisis occurs can help governments and international organizations be better prepared for heritage protection.

Figure 13: Phases of threatened heritage locations and evolution of players involved.

The fact that many of these incidents accelerate in cyclical and relatively predictable patterns gives heritage experts and policy makers the ability to develop plans of action to thwart these issues before they occur rather than trying to catch up after the fact.

During periods of conflict and economic turmoil, when resources available for protecting people and places are scarce, the resources for the protection of heritage are few, and need to be used in the most efficient manner possible in order to have an impact. By understanding patterns of looting and smuggling used by transnational criminal networks, we are able to create a timetable by which the Ministry of Antiquities and other heritage preservation organizations can follow in order to have the greatest effect—by concentrating resources for protection around sites in the months where looting is its most prominent while focusing customs and border officials on exports of illegal antiquities from March through May.

The cyclical and repetitive nature of these heritage threats has an additional benefit of creating a means of emergency preparedness that can be employed during periods of sudden conflict caused by a crisis catalyst. By understanding the types of patterns that occur in the looting of heritage sites following a tumultuous event governments and organizations can be better prepared in having a footprint of what may take place next so that resources can be allocated most efficiently.

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Beyond the Destruction: Cultural Diplomacy on the Island of Cyprus

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Abstract

The division of the island of Cyprus after the 1974 conflict resulted in an ethnically and internationally recognized Greek south, and an illegal Turkish north. Looting and destruction of cultural heritage in the northern region during and after the conflict has often been reported in the media. By using newspaper and other media sources, this paper explores the destruction of cultural heritage in the northern region and the reasons behind it. The policies and politics at work on the island during and after the conflict are elucidated. The international response to these reports was lax until the turn of the century. New policies to deter the export of cultural heritage have since been enacted and programs were developed to help preserve sites on the island. This response, especially that of the United Nations Development Programme, has finally brought the two communities together for the common goal of protecting cultural heritage. Although a resolution to the Cyprus issue is unforeseeable, cultural heritage has recently become a common element of collaboration between north and south. I will argue that more actions on the local level can be taken to ensure that cultural heritage in the northern section of Cyprus is no longer at risk.

Introduction

Cultural heritage has always been a casualty of war. On the island of Cyprus, cultural heritage became a victim of the 1974 armed conflict following Greek and Turkish military intervention. In its aftermath, the so-called Attila Line, a buffer zone (Green Zone) patrolled by United Nations Peacekeeping troops, divided the island creating an ethnically Greek and internationally recognized Republic of Cyprus in the south, and an ethnically Turkish north, the unrecognized Turkish Republic of Northern Cyprus (Joseph, 1997, p. 53). The ethnic division of the island created a mass migration of Greek-speaking Cypriots from the northern part to the southern part of the island, and of Turkish-speaking populations from the south to the north. The Greek Cypriots had to abandon their cultural property including Byzantine monasteries and churches decorated with frescoes, mosaics and icons as well as pre-Christian artifacts, which found their way to the illicit market in the post-fighting period (Joseph, 1997, p. 53). In the post-conflict northern half of the island, deliberate iconoclasm of the Greek-Orthodox past occurred leading to alterations of the cultural landscape. Northern Cyprus' lack of international recognition endangers the island's rich and diverse cultural heritage as it renders it ineligible to receive grants from international organizations or to nominate sites for inclusion on UNESCO's World Heritage List. Currently, the United Nations Development Programme (UNDP), the European Union and the United States are working on cooperative programs that protect cultural heritage while bringing the Greek Cypriots and Turkish Cypriots together for the common goal of preserving and restoring cultural heritage sites. In effect, cultural heritage has acted as a diplomat on the island. The focus of this paper is on the destruction of Greek-Orthodox heritage with a specific focus on Byzantine-era sites and cultural artifacts in the northern section of Cyprus; however, it does not assume that there is no destruction to Turkish-Cypriot heritage in the south or that the Republic of Cyprus has no part in the destruction and illicit trade of antiquities. The focus on the north highlights the struggles cultural heritage faces in an unrecognized state. Cyprus presents a compelling case study of what happens to cultural heritage once the armed conflict is over, and how the efforts to preserve our cultural treasures can be a useful tool in diplomacy. Although a resolution to the Cyprus problem is unforeseeable at this time, these new initiatives are bridging the divide between north and south, and may open new paths into a more permanent solution.

Building a Divided Island

In the early 20th century, the island of Cyprus was a British colony until it was granted its independence in 1960. The British did not easily grant Cyprus independence; the Cypriots were forced into a revolution employing guerilla tactics starting in 1956. Independence was only gained after the United Nations intervened and NATO placed intense pressure on Britain (Joseph, 1997, 19). Residents of the island protested for independence since 1930, as ethnic Greek Cypriots argued for *enosis*, or unification with the Greek mainland, justifying their argument based on their ethnic origins. During the revolution, anti-Greek sentiments culminated in rioting by the Turkish minority, which meant to deter *enosis* (Mallison, 2010, 25). The leader of the revolution, the Orthodox Archbishop Makarios and the National Organization of Cypriot Fighters, comprised of ethnic Greeks, proclaimed to the United Nations that they were not seeking *enosis*, but an independent state for Cyprus (Joseph, 1997, p. 19).

Involved in the formation of the independent state were Greece, Turkey and Britain. The London and Zurich Agreements established the Republic of Cyprus and permitted Britain to maintain two military bases on the island. The agreements enabled the new government to interact with either Greece or Turkey on educational, religious, cultural, and athletic matters (Joseph, 1997, p. 21). The president of the new Republic was to be ethnically Greek and the vice-president Turkish. The first president of the Republic was the revolutionary leader, Archbishop Makarios.

After independence, skirmishes between Greek and Turkish Cypriots were not uncommon. Each ethnic group believed

that the constitution did not grant them enough rights, and pro-*enosis* (Greek) and pro-partition (Turkish) groups began to promulgate their own ideals. Radical extremists, such as the Pan-Cyprian Workers Federation, existed on both sides and attacked civilians and pro-unification organizations (Hitchens, 1997, 53). The political situation was volatile and it was further exacerbated by the political upheaval on mainland Greece, as the Prime Minister of Greece and ally of President Makarios, George Papandreou, was ousted unconstitutionally by the King of Greece. In 1967, the King of Greece was overthrown and a Greek military dictatorship, the Junta, gained control of the country (Hitchens, 1997, p. 64).

Diplomacy failed in the wake of the 1974 conflict. A military coup orchestrated by the Greek Junta was initiated on the island in July of 1974. The Greek staff and forces along with the Cypriot National Guard staged the coup collectively against Makarios who fled the island (Joseph, 1997, p. 51). This was an unfortunate turn of events since Makarios was popular on the island with both Greek and Turkish Cypriots, the economy was doing well, and he was able to quell the ethnic violence (Hitchens, 1997, p. 67). The United States, trying to avoid an outright war between two NATO allies, dispatched the Under-Secretary for Political Affairs, Joseph Sisco, to Ankara (Joseph, 1997, p. 51). Sisco reported that there was no room for diplomacy and Secretary of State Henry Kissinger was quoted as saying, "Turkey was not interested in a negotiated solution; it was determined to settle old scores" (Joseph, 1997, p. 52). Turkey invaded the island at the end of July 1974.

In November of 1974, the Junta was overthrown in Greece and was replaced by the Greek multi-party government of National Salvation (Joseph, 1997, p. 52). At the end of the year, Turkey occupied the northern third of the island and forced a mass migration of Greek Cypriots out of the area. The Attila Line was formed with Turkish Cypriots abandoning their property in the south and appropriating Greek property recently abandoned in the north (Joseph, 1997, p. 53). The Republic of Cyprus continued to thrive in the south.

In 1983, the Turkish Republic of Northern Cyprus was formed, cementing the position that Turkish Cypriots had no intention to unite (Joseph, 1997, p. 53). The resolution of the Turkish Cypriot Assembly, published on November 15, 1983, declared that it had "the right to live and govern itself in its own territory in peace and security, and have the right to preserve its own national identity" (Joseph, 1997, p. 53). The formation of the country and the declaration of independence were meant to keep the status quo of a divided island and the government was and still is only recognized by Turkey, who provides military, economic and political support. The United Nations Security Council proclaimed that the actions by the Turkish north were "illegal and invalid" (Joseph, 1997, p. 54).

Heritage Pre- and Post-Conflict

Prior to the conflict, the Department of Antiquities of the Republic of Cyprus granted permits for a number of archaeological excavations in collaboration with international institutions that worked alongside Cypriots. Furthermore, the Church of Cyprus was funding a large-scale conservation and preservation project of its churches on the island (Nicolaou, 1976, p. 361). The Cyprus Museum reported in its 1974 *Archaeological News* that their restoration works were abruptly stalled due to the conflict and when they returned to the sites, their equipment had been stolen (Nicolaou, 1976, p. 374). However, they continued the restoration of the Selemiye mosque in Nicosia, formally known as Hagia Sophia, and the Haidar Pasha Mosque, also known as the Church of Hagia Ekaterini (Nicolaou, 1976, p. 374). They also discovered that Turkish aircraft fire had damaged the mosaics of the House of Dionysos in Paphos, but continued their restoration work. (Nicolaou, 1976, p. 375). At the Monastery of Archangelos Michael in Lynthrodontas, they lifted the 14th-century frescoes, uncovering 11th-century frescoes that were restored by conservators in situ (Nicolaou, 1976, p. 374). These are only a few examples of the works conducted by the Department of Antiquities, but in the wake of the 1974 conflict, they consolidated their work in the south as they lost their jurisdiction in the north and were not granted access to assess the damage to the cultural heritage there (Nicolaou, 1976, p. 374).

Looting of antiquities on the island is not a phenomenon that was created by the conflict. Illicit trading of antiquities occurred in the pre-conflict environment, but by different aggressors. Greek Cypriots participated in the majority of illicit trading even though there was an established licit art market in pre-conflict Cyprus (Hardy, 2014, p. 460). After the war, it is assumed that the Turkish Cypriots did the majority of the looting and illicit trading, not only because there was an opportunity to profit from the upheaval, but because of the impoverishment Turkish Cypriots faced in light of the illegal status of the Turkish Republic of Northern Cyprus (Hardy, 2014, p. 460). Aside from the economic hardships and sanctions faced by Northern Cyrpiots, other factors that contributed to the destruction and illicit trading of Cypriot artifacts include the heroin/antiquities mafia in control of the north and the market for these illicit materials. (Hardy, 2014, p. 462).

The Republic of Cyprus, though, is not blameless. During the conflict and the immediate years following it, the Republic of Cyprus enacted a "secret" policy that was meant to "protect heritage," but instead aggravated the situation (Hardy, 2014, p. 462). The Republic of Cyprus encouraged wealthy Greek Cypriots to purchase looted artifacts to "rescue" them from the illegal market and ensure that they stayed on the island. The Republic of Cyprus then legalized these collections by allowing archaeologists to publish them and in effect gave them legitimacy (Hardy, 2014, p. 462). However, as Hardy has demonstrated, the illegal collections were comprised of not only looted antiquities from the north, but antiquities from the south as well. (Hardy, 2014, p. 462). From these reports, one could argue that in the turmoil of the conflict, many parties took advantage of the situation. Therefore, these policies endangered heritage and abused the system that was meant to protect it.

A report drafted in 1976 by UNESCO officials who surveyed the damaged cultural sites on the island was never released since it implicated Turkey and would have jeopardized the country's position as a member of UNESCO (Hitchens, 1997, p. 113). Turkey's failure to protect the cultural heritage of

northern Cyprus complicated matters more since they are signatories of the Convention for the Protection of Cultural Property in the Event of Armed Conflict adopted at the Hague in 1954, and could have been prosecuted by the International Criminal Court. Implemented in the aftermath of World War II, the Hague Convention of 1954 was meant to protect cultural heritage property in the wake of an armed conflict—the signatories were responsible for the safeguarding of cultural heritage in occupied territories. (Lynne, ed., 1998, p. 24). Turkey's failure to protect the island's cultural heritage places them in violation of the international conventions they vowed to uphold, since the international community considers them the occupying force. It is also unfortunate that the Republic of Cyprus contributed to the destruction of cultural heritage by encouraging their "secrect" buying policy. Like Turkey, they have also not been subjected to the conventions of Hague 1954.

The Turkish Republic of Northern Cyprus exacerbated the problem in the north by issuing export licenses for artifacts that left the island in the early post-conflict period (O'Connell-Schizas, 2014, p. 18). These licenses were in fact illegal due to the lack of international recognition. In light of the United Nations Security Council's findings stating that the occupation of the northern section of the island was illegal, neither the Turkish Republic of Northern Cyprus nor Turkey are the lawful owners of cultural heritage in the region, and therefore, they cannot issue export licenses (Joseph, 1997, p. 54).

Moreover, the cultural heritage of the northern part of the island suffered greatly by the Turkish Cypriot population due to "indifference and lack of understanding" as Mancini and Bresnaha indicate and can be considered one of the main factors for the destruction and looting that followed the armed conflict of 1974 (Mancini and Bresnaha, ed., 2015, p. 3). The cultural heritage left behind could be interpreted as "a sliver or fragment of enemy territory lying within their own," and the indifference felt towards this cultural heritage turns to destruction when there is an attempt to eradicate the cultural identity of the enemy from the newly conquered territories (Mancini and Bresnaha, ed., 2015, p. 93). Deliberate iconoclasm since the conflict has depleted the north of its cultural heritage, altering the cultural landscape in an attempt to eradicate the Greek Cypriot past.

The issue of looting on northern Cyprus has gained momentum in the last decade. In 2009, the *Washington Times* reported that churches in northern Cyprus have been pillaged, desecrated, looted, and converted into mosques, military hospitals, barracks, and barns (Duin, 2009). It was reported that fifteen thousand frescoes, icons and mosaics have disappeared from churches and monasteries since 1974 (Duin, 2009). There have been eyewitness accounts that the Turkish army used frescoes for target practice and notified the most prolific dealer in Cypriot art, Aydin Dikmen, of their plans to destroy churches so that he may take "things that mattered" (O'Connell-Schizas, 2014, p. 17). Dikmen, an active looter and middleman on the island for over twenty years, is known as "the most active and influential international operator" (Jansen, 2005, p. 20). The Turkish army referred to him as their "official archaeologist" (O'Connell-Schizas, 2014, p. 17). Dikmen profited from the disruption on the island.He became the most notorious seller of Cypriot art as he forged or obtained export licenses from the Turkish Republic of Northern Cyprus (O'Connell-Schizas, 2014, p. 17).

The icons of the iconostasis of the Christ Anitiphonitis Church is one of several examples of artifacts looted by Dikmen. They were repatriated in September 2013 after a long legal battle in the Dutch courts. The 16th-century icons of the Apostles Peter, Paul, John, and Mark were bought by the Lans, a Dutch couple, from Dikmen (O'Connell-Schizas, 2013). They were discovered as stolen and confiscated in 1995 when the couple tried to sell them at Christie's Auction House (O'Connell-Schizas, 2013). The court case of *Autocefale Grieks-Orthodoxe Kerk te Cyprus v. W.O.A. Lans* found in favor of the Lans as they bought the icons in good faith. The case was without precedent as it was the first one tried under the 1954 Hague Convention in the Netherlands; however, the 1954 convention was not adapted into local law, and as a result, the Lans were not subjected to its stipulations (O'Connell-Schizas, 2013). This further highlights the limitations of Hague 1954 as discussed previously. Once the Netherlands adopted Hague 1954 into local law in 2007 by enacting the Cultural Property Originating From Occupied Territory Act, which prohibits the import and ownership of cultural property from a war zone, the Cypriot Minister of Foreign Affairs sent a letter requesting the return of the artifacts, which were repatriated in 2013 (O'Connell-Schizas, 2013). In this case, the Republic of Cyprus was deemed the rightful owner although the objects originated in the north, since Turkey is "an occupying force" and the Turkish Republic of Northern Cyprus is not internationally recognized.

Another instance of Dikmen's work includes the theft of the frescoes of Christ Pantocrator and the Virgin and Child surrounded by the archangels Gabriel and Michael, torn from the walls of a 13th-century Byzantine church. They were purchased by The Menil Collection in Houston in 1984 and returned in 2011. (Povoledo, 2011). The case of the Menil frescoes demonstrates that due diligence by the collector can change the way museums and art collectors handle artifacts of contested provenance. When Mrs. de Menil considered buying the frescoes, she approached the Church of Cyprus about their origins who informed her that they were stolen from the church of Saint Euphemianos in Lyssi, located in the northern section of Cyprus (Donadio, 2014). The de Menils agreed to purchase, restore, and return the frescoes to the Church of Cyprus after their loan period ended in 1998. However, the loan period was extended indefinitely and the frescoes remained at the Menil Collection until 2011 when Cyprus and the Church requested their return in an era of aggressive campaigning on their part to highlight the plight of Christian sites in the northern area of Cyprus (O'Connell-Schizas, 2014, p. 20). The frescoes were repatriated and installed in the Byzantine Museum of the Archbishop Makarios III Foundation in Nicosia, not in situ. It is important to note in this case that the Church of Cyprus, as well as the Republic of Cyprus, believes that they have title over any object of Byzantine heritage. Like the case of the Lans' icons, the repatriation of the frescoes to the Republic of Cyprus and not back to their original location emphasizes this notion.

When Dikmen was finally apprehended, he had €60 million worth of antiquities in his three Munich apartments comprising of Cypriot frescoes, mosaics, icons, ancient coins, pre-Columbian pottery, and stolen paintings (O'Connell-Schizas, 2014, 20). The raid on Dikmen's apartment occurred in 1997 but the artifacts were left in a political limbo for over a decade as it had to be decided when the objects left Cyprus (Hickley, 2013). The courts concluded that 173 items were removed from Cyprus after the conflict and therefore, legally belong to the Republic of Cyprus. The objects were repatriated in July of 2013 (Hickley, 2013).

The case of the mosaics of the Church of the Panagia Kanakaria is an example of lack of due diligence by the purchaser. In 1979, the Church of Cyprus was given the opportunity to inspect some of the property they still had claims to and discovered that the mosaics of the church had been removed. They notified UNESCO and reported it to museums, academics, and journalists (Watson, 1998). The mosaics happened to be in Indiana in the possession of Peg Goldberg, a contemporary art dealer. She purchased the pieces from dealer Michel van Rijn in Switzerland, who was found with other church objects from Northern Cyprus (Watson, 1998). The Republic of Cyprus and the Greek Orthodox Church of Cyprus sued her in the United States upon discovering she had the mosaics. The case of *Autocephalous Greek-Orthodox Church of Cyprus and the Republic of Cyprus v. Goldberg and Feldman Fine Arts, Inc., (Autocephalous Greek-Orthodox Church of Cyprus and the Republic of Cyprus v. Goldberg and Feldman Fine Arts, Inc*. 917 F. 2d 278.) was tried in a U.S. court in 1988. Peg Goldberg had the mosaics "restored," flattening the mosaic of the apse for a better aesthetic to make them more appealing to buyers (Watson, 1998). The case was tried in Indiana under a replevin action (an action seeking return of personal property wrongfully taken or held by the defendant). As a result, the mosiacs were granted to the Church of Cyprus and are currently housed in the Republic of Cyprus in the Cultural Centre of the Archbishop Makarios III Foundation along with the frescoes from the Monastery of Christos Antiphontis (Watson, 1998).

Fortunately, the recent media attention on the looting of Cyprus has resulted in the repatriation of art bought by private collectors. Boy George, the musician, recently returned an icon he purchased in the 1980s after it was brought to his attention that it had been stolen (Michaels, 2011). An anonymous German family returned the icons of the School of Hagiography of the Monastery of Saint Heraklidios from the 18th to 19th centuries after the family contacted the Cyprus Church, doubting the provenance of their icons. After the family had been informed that they were indeed looted, they returned them to the Greek-Orthodox Church of Cyprus. (Church of Cyprus, 2010).

The case of the *Autocephalous Greek-Orthodox Church of Cyprus and the Republic of Cyprus v. Goldberg and Feldman Fine Arts, Inc.*, and the Menil instance reveals that artifacts originating from the north have been repatriated to the Republic of Cyprus in the south. The Church of Cyprus claims that they have legitimate title to abandoned buildings in the north (Navaro-Yashin, 2009, p. 3). The legality of the Church of Cyprus' claims rests in the Immovable Property Law of Cyprus, in which a religious institution "may own and register property" giving the church legitimacy in regards to Byzantine-era sites and artifacts (O'Connell-Schizas, 2014, p. 16). When making claims to title, the Church of Cyprus attempts to justify their actions through scarce inventories with heavy reliance on eyewitness claims (O'Connell-Schizas, 2014, p. 23). John Eliades, the director of the Byzantine Museum in Nicosia, in reference to the de Menil frescoes said they will remain at the museum "until the day they will be put back in the chapel," assuming he meant until Cyprus was unified and they can be safely returned (Donadio, 2014). This mentality threatens to leave the northern part of Cyprus vulnerable to lootings and the depletion of their Greek Cypriot cultural heritage since it is assumed that it does not belong to them. The repatriation of cultural heritage to the south further undermines the notion that cultural heritage of the island belongs to everyone and reinforces the idea that the Greek Cypriots of the south are the rightful owners of Byzantine heritage.

International Intervention

Although the United Nations Security Council found that the occupation of the northern third of the island by the Turkish Republic of Northern Cyprus is illegal, the UNDP has been active on both sides of the island since 1979. For example, the UNDP sponsored the Nicosia Master Plan which began in 1979 as a bi-communal effort to restore and preserve the ancient city of Nicosia (Petridou, 2003). After the 1974 conflict, the capital of Nicosia was divided in half with the Attila Line running through the historic district. The plan was conceived to encourage exchange between the north and south and to bridge the gap between the well-preserved and funded south and the underserved north. The project is ongoing. Committee members of both groups, Greek and Turkish Cypriots, meet to discuss the progression of the project and ways in which to conduct and expedite the work. $58 million have been invested thus far in the plan that is taking place in two phases. The first is the preservation and restoration of priority buildings and squares within the walled city. The second phase intends to develop business areas in the historic districts outside the walls (Petridou, 2003).

The European Union does not recognize the Turkish Republic of Northern Cyprus; however, they too have decided to support cultural heritage initiatives that work with both communities in order to protect the island's cultural past. In an effort to preserve and fund cultural heritage sites in the north, the European Parliament established the Technical Committee on Cultural Heritage in April of 2008 (United Nation Development Programme [UNDP], 2013b). The following year, the UNDP established the Advisory Board for the Preservation, Physical Protection and Restoration of the Immovable Cultural Heritage of Cyprus, working concurrently with the E.U's Technical Committee and acting as liaison for this new initiative (UNDP, 2013b). The European Union provides funds to the UNDP in an effort to bring the Greek Cypriot and Turkish Cypriot communities together. In 2012, the European Union sponsored the 2012 Aid Programme for the Turkish Cypriot Community, contributing €4 million for the preservation of cultural heritage on both sides of the Green line (European Commission Press Release, 2013). The

initiative resulted in the conservation and preservation of a handful of heritage sites including Greek Orthodox churches in the north and Islamic sites in the south.

The UNDP, in partnership with the European Union, was able to complete a six-month study on the cultural heritage of the northern section of Cyprus in 2010. The study, which received a €500,000 grant from the European Union, carried out 121 technical assessments of the current conditions of sites on the island and identified ten sites that needed emergency measures (UNDP, 2015a). In 2012, the European Union, at the request of the UNDP, provided the funds needed to carry out the emergency measures on the sites identified in 2010, which included four mosques, one bathhouse, and five churches on both sides of the Green Line (UNDP , 2013b).

In Phase 1 of the project, which began in 2012 and cost the European Union €2 million, work on the Denya Mosque, the Melandrina Church and Monastery, and the Church of the Demirhan Panagia was completed. Work on the Serhatköy Profitis Elias Church, the Kato Paphos Bath, and the Mustafa Pasha Mosque is ongoing. The Panagia Church was the first project completed under this initiative. The official ceremony commemorating the completion of the church took place on Wednesday, December 11, 2013 (UNDP, 2013a). On the occasion of the completion, representatives from the Technical Committee acknowledged that the completion of the project was "another confirmation of our constant commitment to the quality and dignity of our cultural heritage," affirming the role that the international collaboration has in protecting and saving endangered cultural heritage (UNDP, 2013a). More recently, the Othello Tower/Citadel in Famagusta in the northern section of Cyprus is undergoing a technical analysis and emergency work. The eight-month project focuses on stabilizing the masonry, arches, and other unstable sections as well as adding drainage systems (UNDP, 2014a).

The restoration of the Holy Monastery Apostolos Andreas located in the northern section of Cyprus on the Karpasia/Karpaz peninsula is another case study of what can be achieved when the Greek Cypriot and Turkish Cypriot communities work together. The project began in July of 2014 as part of the Phase 1 Programme and is funded jointly by the Greek Church of Cyprus and the Evkaf Administration of Northern Cyprus providing €5 million, with a small contribution from the United States Agency for International Development (USAID) consisting of €25,000. Tiziana Zennaro of the UNDP called the joint venture "one more concrete step in the pursuit of trust and cooperation between the Greek Cypriots and Turkish Cypriots" (UNDP, 2014b). Phase 1 of the project is ongoing.

Phase 2 was initiated in August of 2013 running concurrently with Phase 1, with an expected completion date of February 2016, and has a projected budget of €2 million. It incorporated eight more sites to the emergency list for conservation and preservation efforts, such as the exhibition room in Kyrenia Castle as well as two mosques in the villages of Evretou and Tserkezoi located in the Republic of Cyprus (UNDP, 2013d). The UNDP and the Technical Committee are working hard not to ostracize the Turkish community by addressing the needs of their monuments in the south.

The second phase of the project expanded the parameters of the first by educating the general public about the cultural heritage found in the northern section of the island hoping to "promote respect and appreciation of the rich and varied cultural heritage of Cyprus" and "highlight and promote the significance and value of the rich and plural cultural heritage of the island as a powerful potential agent for active cooperation, mutual understanding and collaboration" (UNDP, 2013d). The expansion of the project is meant to include the human component of cultural heritage and the impact it can have in solving the division of the island. It has been proven that through these policies enacted by the international community, cultural heritage is a common element between the two communities, an element that is being used to initiate discussions that could later contribute to resolving the Cyprus conflict.

As the primary financier for the bi-communal preservation activities, the European Union is investing in cultural heritage as a means to ameliorate the stalemate of over forty years. The funds provided by the European Union for its own sponsored programs and for those of the United Nations suggests that it promotes cultural heritage preservation as a means for fostering a sense of unity on both sides. For example, they acknowledged the efforts by both north and south in the name of cultural heritage were so profound that they awarded the non-profit organization, Home for Cooperation, located in the buffer zone, the European Union Prize for Cultural Heritage/Europa Nostra Award (Financial Mirror, 2014). This award is the most prestigious prize in the European Union for cultural heritage. The award, granted to an organization located in the buffer zone and working with both sides, highlights the renewed efforts to include the northern section of Cyprus in European matters (Financial Mirror, 2014). Through these actions, the European Union recognizes cultural heritage as a channel through which diplomacy can occur.

USAID has been active on the island since the conflict. The agency's mission is to end extreme poverty by providing assistance to foreign countries (USAID from the American People). In Cyprus, their recent efforts have focused on cultural heritage, using it as a way to forge common ground between the two communities. The mission of USAID in Cyprus is to "support cooperation between the Greek Cypriot and Turkish Cypriot communities, to reduce tensions and promote a climate that will foster reconciliation and a durable peace settlement on the long divided island" (USAID from the American People, 2014). USAID assistance on Cyprus is aimed at protecting the shared cultural heritage of the island and recognizing the significance cultural heritage has in bringing the two communities together. The involvement of USAID on the ground in Cyprus "advances reconciliation in Cyprus through restoration of shared heritage" having a more direct impact on the Cyprus problem and potential solution (USAID from the American People, 2014). With the efforts of USAID, the United States is trying to reinforce their stance that the conflict can be resolved through peaceful resolutions. Furthermore, USAID support indicates the important role cultural heritage has in bringing opposing sides together.

Solutions to an Ongoing Problem

Even with the added stress of economic hardships, Turkish Cypriots have made attempts within the last decade to protect and preserve Byzantine heritage. The Department of Antiquities and Museums in the north has converted five churches, such as the Church of Saint Barnabas, into museums (Balderstone, 2007, p. 9). At the Church of Saint Barnabas, spiritual value has been ignored as the Department preferred to highlight the historic value of the site, the resting place of the Apostle Barnabas who brought Christianity to the island of Cyprus (Balderstone, 2007, 9). His tomb is visited by pilgrims and tourists alike while the church itself contains icons from various monasteries and churches in Northern Cyprus and the monks' rooms display archaeological artifacts. The other four churches are organized in a similar manner, however, many Byzantine and post-Byzantine churches are overgrown with vegetation and lack any preservation efforts (Balderstone, 2007, p. 9).

The initiatives conducted by international organizations are not the only instances where the Greek and Turkish communities have come forward to protect cultural heritage. In early 2014, the *New York Times* reported that there were at least forty grass-roots cooperative programs in which Cypriots from both communities have worked together to restore sites and areas in the north (Alderman, 2014). For example, the church of Saint Charalambos in the village og Kontea held its first mass in forty years in February of 2014 after the current and former residents of the area were " … tired of watching its paint peel and its altar decay. They took matters into their own hands…" and worked together to restore the church (Alderman, 2014). This is an excellent example of Greek and Turkish Cypriots contributing to the restoration of the cultural landscape that has long been neglected.

Northern Cyprus should take a twofold approach to cultural heritage. They should follow UNESCO's recommendation in taking a nation-centric approach—"advocat[ing] for national retention" of their cultural heritage (Forrest, 2007, p. 134). For instance, artifacts originating in the north should be repatriated to the north instead of the current policy where they are repatriated to the south. This policy would enhance the interpretation of that object if returned to or near its original location. It would also increase the appreciation and cultural value of the object among the citizens and possibly deter any future theft or destruction, therefore, no longer depleting the area of its cultural heritage.

Currently, the Republic of Cyprus has title to any items that have left the island enacting the concept of "trusteeship" when arguing for their repatriation to the south (Forrest, 2007, p. 134.) The north needs to institute local laws that protect cultural heritage and policies that allow them to retain and regain their cultural heritage. Through these initiatives, they can prove that "trusteeship" is an outdated policy.

There should also be an "internationalism" and "common heritage" approach when Cypriots encounter heritage that they do not identify with, assuming that no matter the ethnic origin, anything originating from the island is worth protecting (Forrest, 2007, p. 134). To elaborate further, cultural heritage should be considered "a component of a common human culture, whatever their places of origin or present location, independent of property rights and national jurisdiction" (Forrest, 2007, p. 127). This concept when adapted into local laws in northern Cyprus and promulgated to the citizens will help ameliorate the negative attitude Cypriots have when encountering cultural heritage they do not identify with (Forrest, 2007, p. 125). When the concept of "common heritage" is fully understood, the outright destruction of cultural heritage can be avoided. Forrest argues that the "philosophical notion" of common heritage can be applied into international law and should in the case of Northern Cyprus (Forrest, 2007, p. 127). If cultural heritage is perceived as property that belongs not just to Northern Cypriots, but also to all humans, the change in mentality may deter destruction and looting. It also may lead an increase in grass-roots preservation efforts reversing the damage done in the past.

Conclusion

The threat to heritage in northern Cyprus is a result of the policies and politics employed during and after the 1974 crisis, which has since lessened as new initiatives are placed in an effort to preserve and restore sites on both sides of the island. Cultural heritage has proven to be an effective tool in diplomatic matters, as it has influenced the increase in bi-communal activities on the island. The Cyprus problem presents a compelling narrative of what role cultural heritage has in war and its aftermath and with the renewal of peace talks in May of 2015, the status quo is finally being addressed (Associated Press, 2015). The political complications of Northern Cyprus has left their cultural heritage at risk, as the lack of legitimacy makes them ineligible for international aid, and their economy has been stagnant as a result of embargoes leaving little room in their budget for cultural heritage management and preservation. The policy of ostracizing the Turkish Republic of Northern Cyprus has fortunately been discouraged in the new decade opening a path for more communication and outreach to Turkish Cypriots. Cultural heritage has played a contributing factor in diplomacy and has in effect, acted as a diplomat between the two communities. A solution to the division of the island is out of reach, but the solution to protect and preserve cultural heritage on the island is attainable.

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The Materiality of Post-War(s): The Impact of Conflict on the Archaeology and Landscape of Iraqi Kurdistan

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Abstract

Today, the Kurdistan Region of Iraq is distinguished by its economic prosperity and relative security, but its history demonstrates that it is not immune to the ravages of warfare. Since prehistoric times the people of this region have been known for their fierce independence and strong tribal ties. In 2013 the Rowanduz Archaeological Program (RAP) was granted a five-year permit for survey and excavation in the Soran District, located in the heart of this region. RAP has discovered evidence of warfare beginning around 800 B.C.E. and stretching to the present day. Surveys in the area have also uncovered changes to the landscapes, like deforestation and abandoned villages from conflicts in the 1980s and 1990s. This paper will present the material RAP has uncovered relating to the impact of conflicts on the archaeology and landscape of Iraqi Kurdistan.

Introduction

The Kurds are known for their fierce independence and strong tribal loyalties that have led to multiple revolts against larger governmental entities and empires, as well as fighting among local tribal leaders and coalitions of the Kurdish populace. During the Ottoman Empire, Southern Kurdistan (or Iraqi Kurdistan) gained and lost independence multiple times from the 1500s to the 1900s (Bengio, 2005). More recently Kurdish Militias rebelled against Saddam Hussein during the Iraq-Iran War (1980–88), resulting in the retaliation known as the Al-Anfal campaign, and the use of chemical weapons in the Kurdish Region of Northern Iraq (Human Rights Watch, 1993). After the fall of Saddam Hussein in 2008, this region has been relatively autonomous and is officially known as the Kurdistan Region of Iraq. Many of the conflicts have been decidedly less violent, as the tribal identity and intertribal conflict has been shifted in to the political arena. The two main tribes, or factions, Barzani and Talabani, respectively form the basis of the Kurdish Democratic Party and the Patriotic Union of Kurdistan, the two primary political parties in the region.

Southern Kurdistan, especially the modern day district of Soran, has been controlled by primarily external forces throughout its history. This paper focuses on the archaeological remains in this area and how they link with the modern history, beginning with the Ottoman Empire to the recent years of relative autonomy.

Rowanduz Archaeological Program (RAP)

In 2013, the Department of Antiquities of the Kurdistan Regional Government granted the Rowanduz Archaeological Program (RAP) a five-year permit to conduct archaeological surveys and excavation in the Soran District of the Northeastern Erbil Province (Danti, in press; Danti, 2014a). The Soran District is divided into four sub-districts, those of Diyana, Khalifan, Rowanduz, and Sidekan. RAP's survey area extends into the sub-districts of Diyana, Rowanduz, and Sidekan. The Soran District includes the tall peaks of the western Zagros as well as multiple intermontane valleys. The mountains create natural strongholds for controlling routes, especially the passes at Kel-i Shin and Gawra Shinka that lead into Iran. These passes have been used for millennia based on Assyrian texts and the scarce archaeological research that has been done in the region. The high valleys provide summer pastures for herders and tracts of land for agriculture (Danti, 2014b). The mountain ranges also managed to divide the population into different tribal groups, making it difficult for them to unite into one large political entity.

Figure 1: Kurdish States circa 1835 with the Rowanduz Archaeological Program's area highlighted (after Panonian 2011).

RAP hopes to implement a long-term integrative program of multidisciplinary archaeological research projects and cultural heritage management initiatives (Danti, in press; Danti, 2014a; Danti, 2014b). RAP integrates multiple methods including archaeological excavation, archaeological survey, geophysical survey, bioarchaeology, and cultural heritage management strategies that include emergency rescue excavation. RAP's research design centers on producing a diachronic assessment

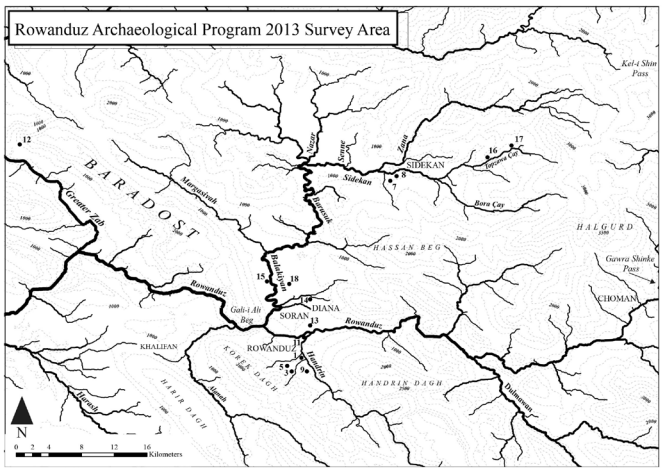

Figure 2: RAP's Survey Area (Map by Marshall Schurtz)

of past cultures and ecology spanning from the early Neolithic to the modern era with emphasis on the Bronze and Iron Ages.

Archaeology of the Soran District

Between 1550 and 1722, the Ottoman Empire partook in many conflicts with the Safavid Dynasty of Iran and Azerbaijan. After the Persian-Ottoman battle of Chaldiran in 1514, the emperor, Selim the Cruel, divided Southern Kurdistan into 16 principalities and installed local chiefs as governors (Bengio, 2005) (Fig. 1). Emperor Selim did this in order to create a buffer zone in the high mountains between the Ottoman and Persian Empires. In order to keep this region under his control, he granted autonomy to these districts, including Soran, and as such the populace was able to strike their own coinage, have prayer recited in their name, and were not required to pay tribute to the sultan. However, the Kurds had to agree not to rise against the empire or to modify their borders (Kendal 1978). Western missionaries, consulates, and schools reached Iraqi Kurdistan beginning in 1835 (Bengio, 2005).

Sidekan Sub-District

The Sidekan Sub-District is located in the northern part of the Soran District, and borders Turkey and Iran. This sub-district is known for its high elevation, craggy peaks, and relatively sparse population (Fig. 3b). One of the remaining buildings in Sidekan dates to the early 19th century and is a large stone fortress, bazaar, or combination of both (Fig. 3c). This was constructed to watch the border with Iran, located approximately 15 km to the northeast, and was used as a military station until its abandonment in the 1980s.

After the Ba'athist Revolution of 1963, supported by the Kurdish populace, the Iraqi government signed a cease-fire with the Kurds. Tensions soon rose when some Kurdish groups began to push for more political autonomy, and a series of bombings began (Bulloch & Morris, 1992; Cohen, 2008; Vanly, 1978). Between 1964 and 1969, four wars took place in Kurdistan, between the Kurds and the Central Iraqi Government, with the biggest battles being fought on the Erbil plain. Saddam Hussein took power in 1978 and reinstated the Kurdistan Democratic Party (KDP), allowed for the creation of the Patriotic Union of Kurdistan (PUK), and acknowledged

Figure 3: A) PKK mural on building in Sidekan (Allison Cuneo). B) View of Sidekan Valley looking towards Iran (Allison Cuneo). C) Ottoman Fortress in Sidekan.

the Kurdistan Worker's Party (PKK) (Bulloch & Morris, 1992; Vanly, 1978). He recognized the Kurdistan Autonomous Region in the Autonomy Accord (signed by the Kurds and the central government), and a legislative assembly was established in Erbil. In order to define the Kurdish Region, the government decided that 50% or more of the population would have to self-recognize as Kurdish (Vanly, 1978) to be considered part of the Kurdish Autonomous Region. During the 1970s, cities along the borders of Kurdistan were subjected to a program of Arabization where Kurds were forcibly resettled in southern Iraq and Arabs from the south were moved north to increase the Arabic population in these regions, most notably in the city of Kirkuk (Vanly, 1978). In the Soran district, small villages were abandoned and cities such as Soran and Harir experienced an influx of people from the south (Danti, 2014a). In the Sidekan Sub-District, three main deportations occurred, in 1961, 1978, and 1988, of which few have returned (Vanly, 1978). This region, with its direct route into Kurdish Iran, also witnessed multiple episodes of migrations, both to Iran as well as back to Iraq. A humanitarian mission of French doctors crossed the border in 1974, from Iran to Iraq, through the town of Sidekan and recorded their trip.

> Signs of war are noticeable as soon as you cross the frontier. The very pass which marks the frontier is the site of a camp holding 25,000 people. Even the most elementary facilities are lacking. The people huddle here and there on either side of the road, with no shelter except their scanty baggage and a few blankets (Dominique Eudes, quoted in Vanly, 1978, p. 180).

Like the border with Iran, the border with Turkey has also been relatively fluid in this region. The valleys between the ridges of the Zagros run north/south and contact following these routes is relatively easy. From 1984 to 2013, the PKK (Kurdistan Worker's Party) waged war with the Turkish state for cultural and political rights for Kurds in Turkey. In the early 1970s, the PKK was declared a rebel group by the Iraqi government, however the PKK used the mountains north of Sidekan as staging grounds for their forays into Turkey. As seen on the building from Sidekan (Fig. 3A), people in this region supported the PKK in their fight for Kurdish rights.

Rowanduz Sub-District

The Rowanduz Sub-District is located in southeastern part of the Soran District and borders the Choman District. This district contains the large Choman-Rowanduz River, as well as multiple deep canyons and gorges.

Qalaat Lokhan

Qalaat Lokhan is a small (50 m x 50 m) archaeological site on the northern edge of modern Rowanduz and overlooks the village of Kaw Lokhan (Danti, 2014a). Rowanduz is located on the top of a mountain, between two gorges overlooking the main river that flows into the Rowanduz gorge. The town is a strategic point that overlooks the valley before it enters the gorge that eventually leads to the plains of Erbil. The site guards the approach to and from Old Rowanduz, now modern day Kaw Lokhan, up to the spur of Qala Tiluk (Danti, 2014a). After the Sorani Emirate's collapse in 1837, the Ottomans made Rowanduz the seat of a *qaimmaqam* (governor/mayor) under the Kirkuk *sanjaq* (district) of the Vilayet of Mosul. Prior to WWI, the elites lived on this high point overlooking the valley. During WWI, the larger part of Rowanduz's population was slaughtered by the Russians or forced to flee and the settlement was abandoned (Masters, 1953). It has since been re-occupied.

In 2013, the *qaimmaqam* of Rowanduz, Serwan Sereni, requested RAP perform a site assessment to determine the nature of archaeological deposits in order to submit an opinion on the suitability of the location for a new regional museum (Danti, 2014a). In the 1990s, the Soran/Rowanduz museum was destroyed by Saddam Hussein's troops and the artifacts were taken to Baghdad. This museum had a majority of local artifacts, but also contained artifacts from around Iraq, including tablets from the ancient site of Nippur. The destruction was done as a propagandist move by Hussein in order to destroy the heritage of the region and try to create an overarching pan-Arabism, pan-Islamic ideology (Bulloch, 1992; Marcus, 2009). The district is trying to rebuild its museum in order to showcase the archaeological and historical material in the area. In order to place a museum on this point, they would need to level the area, which would destroy the historic site. In 2011, during an initial stage of the museum construction project, a bulldozer cut the edge of the main mound and clipped a stone wall. The antiquities office halted construction at the site.

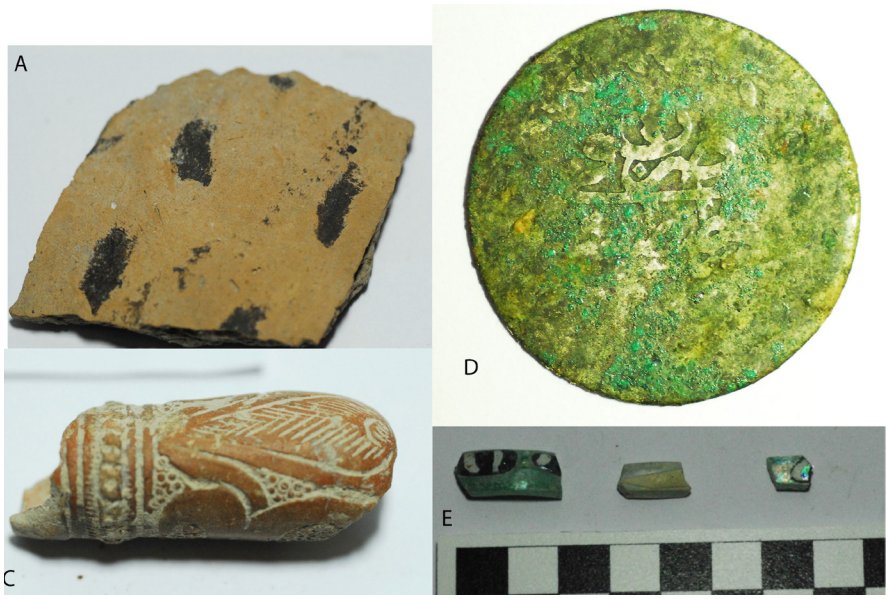

Figure 4: Objects from Qala'at Lokhan, Top Left: Diyana Ware, Top Right: Coin (1839–1844), Bottom Left: Pipe Fragment, Ottoman, Bottom Right: Pieces of Islamic Glass Bracelets.

RAP created a topographic map of the site and excavated three soundings (Danti, 2014a). The first two soundings, Operations 1 and 2, were placed over the masonry corner exposed by the bulldozer in order to recover interior and exterior contexts. RAP exposed the southeast corner of the building, which was constructed from local limestone, and reached the floor of the building. A modern gun emplacement, probably from the 1990s conflicts in the area, disturbed the top of the building (Danti, 2014a; Marcus, 2009; Recchia, 2014). Glazed ceramic and clay pipes indicate a date no earlier than the Safavid Period/Early Sorani Emirate (1501–1736). The ceramic and numismatic evidence indicates that occupation extended into the Late Ottoman Period. Ceramics of "Diyana ware," a buff ware with black, sometimes bituminous paint, dating to the Late Ottoman and Post-Ottoman eras were also found (Fig. 3) (Vorderstrasse, 2014). This ware was studied by ethnographers and archaeologists, and was made in Diyana until the 1950s (Matson, 1983; Vorderstrasse, 2014). The glass bracelet fragments are common throughout the Islamic Period, mainly in burials (Spaer, 1992). The small pieces of bracelets we collected from the lowest levels at Qalaat Lokhan are decorated with a mosaic eye pattern in black and white, on bracelets that are green, yellow, or blue. According to Spaer, this decoration is common in Ottoman assemblages, but not found in Pre-Ottoman times (Spaer, 1992, p. 54). While the coin (Fig. 3) is too corroded for us to see the exact date, it most likely is from the reign of Abdülmecīd I from the Kostantiniyye mint (1838–42) based on the limited writing on the back of the coin (Numista, 2012).

Operation 3 was placed south of the building to determine if earlier periods were present. This two by two meter test pit uncovered two phases of Late Islamic midden, consisting of an ashy matrix with abundant faunal remains, and a low density of ceramic and glass (Danti, 2014a). According to zooarchaeologist Tina Greenfield, Operation 3 seems to be where the people were processing and cooking meals, based on the size and tool marks on the bones (personal correspondence March 19, 2015).

There are two periods of occupation at Qalaat Lokhan, the first dating to the Late Islamic Period (17th to 19th centuries), and the second, a more modern military encampment (20th century) placed on top of the high ground. Local tradition maintains that the earlier period is represented by a structure associated with Mir Mohammad and was part of a network of towers and fortresses constructed during the Sorani Emirate (1530–1837) that guarded the main approaches to and from Rowanduz (Danti, 2014a; Masters, 1953; Özoglu, 2004). A fortress attributed to Mir Mohammad's son stands across the river. Two recently reconstructed stone watchtowers occupy bluffs to the east and west of the site across the deep gorges, and date to this period. Viewshed analysis performed on the two towers combined with Qalaat Lokhan and the Qalaat across the river shows that these locations had good views of the surrounding countryside, and we infer that these Islamic sites were situated to control the important crossroads in the area of Kaw Lokhan (Danti, 2014a).

The archaeology backs the history of the area. The Sorani Emirate (see Fig. 1) gained its full independence from the Ottoman Empire in the 1530s, but was reincorporated into the Ottoman Empire as a semi-autonomous vassal state (Kendal, 1978; Vanly, 1978). They had to enforce Ottoman laws, but were able to mint their own coinage, have their own governors and police force, and did not have to pay taxes or tribute to the empire. The Emirate gained independence under Mir Mohammad, or Mohammad Khor (Mohammad the Blind), when he launched a revolt against the Ottoman Empire between 1833 and 1836 (Eppel, 2008). He wanted to unite the Kurdish populations and form an independent Kurdistan, and Mir Mohammad chose Rowanduz as his capital establishing armament factories there to create his own rifles, ammunition, and cannons. By the end of May 1833, his army of 30,000 had brought Southern Kurdistan under his control (Masters, 1953). By 1835, Mir Mohammad had extended this Kingdom to the border of Southern Azerbaijan. In 1836, he was fighting against Russia, the Ottomans, and the Persians (Ghassemlou 1965). In the end, Mir Mohammed lost control over his people, and surrendered to the Ottomans in 1837. He was assassinated by the Sultan's men in Trebizond (Kendal, 1978). This revolt led to many smaller revolts throughout Kurdistan in the next decades. Local tradition seems to be correct in this case, with Qalaat Lokhan dating to the Sorani Emirate, and the two towers as well as the castle across the river also seem to be dated to this period.

Local tradition maintains that the second period of occupation at Qalaat Lokhan dates to the 20th century conflicts in the area, both between tribes as well as between Iraq and Iran. The *qaimmaqam*, Serwan Sereni, informed us that the point with the high mound was used during tribal warfare and the blood feuds of the early part of the 20th century. Edmund Leach wrote a monograph about the blood-feuds of Rowanduz in 1938 (Leach, 1940). The site was later occupied by Barzani supporters, and the fortress across the river was occupied by Talabani supporters. The military conflict between these two tribes lasted until the 1990s (Marcus, 2009), but today the conflict continues in the arena of politics between the two main political parties. The second period of archaeology at Qalaat Lokhan probably dates to the Iraq-Iran War (1980–88) based on the presence of sandbags in the section, as well as tin cans for food, and ammunition. In front of the structure is a large open plateau, which may have been used as a stage for larger machine guns, or even anti-aircraft guns, but no archaeological evidence was found to support the hypothesis.

Diyana Sub-District

The Diyana Sub-District is centrally located in the Soran District, and contains the largest population of the four Sub-Districts of Soran. It contains the Diyana plain, which is mainly used for agricultural purposes.

Hamilton Road and Diyana Aerodrome

After WWI and the subsequent dissolution of the Ottoman Empire, the League of Nations granted Mosul Province, including Southern Kurdistan, along with the provinces of Baghdad, Basra, and Mosul, to the British as a protectorate for 25 years (Vanly, 1978). It also stated that Kurdistan would have Kurdish administrators, magistrates, teachers and Kurdish would be the official language, but these policies were never enforced (Cohen, 2008; Kendal, 1978). In 1932, the

British granted Iraq relative independence under Hashemite rule, but it still controlled military bases in the country under the Assyrian Levies (Calvary). To control their Levies, as well as watch Iran and Russia, the British consulate in Mosul commissioned a road that led from Erbil to Rowanduz and then on to Piranshahr in Iran (Cohen, 2008; Hamilton, 1958).

The Hamilton Road was designed by A.M. Hamilton, whose adventures are chronicled in his book, *The Road Through Kurdistan* (1958). Constructed by a work team of Persians, Kurds, Assyrians and Arabs between 1928 and 1932 (Hamilton, 1958), this road is considered one of the greatest engineering feats of the past two centuries. The road led through mountain passes and gorges that were inaccessible by motor transport and barely by animal caravans. Instead of British troops going from Beirut to Baghdad, then to Tehran, this road linked Beirut to Tehran, almost directly (Cohen, 2008; Hamilton, 1958). It originates in the Erbil plain at 409 m above sea level, crosses five mountain ranges and ends at the Iraq-Iran border at 1850 m above sea level. It traverses the Gali Ali Beg canyon, "one of the grandest formations of nature to be found in the world," and nicknamed the Grand Canyon of the Middle East (Hamilton, 1958). The road also passes through the Diyana plain, where the Assyrian Levies were stationed.

Figure 5: Gali Ali Beg Canyon from Hamilton Road. (Allison Cuneo)

Figure 6: Gird-i Dasht. Clockwise from top left: The Mound of Gird-i Dasht; Ottoman Pipe bowl; Illustration of a Czechoslovakian razor; Shell casings and bullet

The 1920s and 1930s were marked by Kurdish revolts against the British Mandate, many of which originated in the Soran area of Kurdistan. In 1922, the British created a Royal Air Force (RAF) Aerodrome next to the Christian village of Diyana in order to observe the Kurds, Iranians, and Russians (Cohen, 2008). This airfield was a staging ground for the Assyrian Levies. The Northamptonshire Regiment of the British RAF was moved to Hinaidi, Iraq in June of 1932, and was placed in charge of the Diyana Aerodrome (Cohen, 2008). In 1941, after an Iraqi coup d'état and the subsequent Anglo-Iraqi War, the British stepped in and re-established the Hashemite rule in order to control their economic interests (Cohen, 2008). In 1943, Mustafa Barzani led a revolt that began in Barzan, near the Diyana plain, and defeated the Iraqi Army (Vanly, 1978). The British used the Diyana Aerodrome in order to control the population and force Barzani to retreat into Iranian Kurdistan. Barzani set up the Mahabad Republic in the Kurdistan Region of Iran in 1946 (Roosevelt, 1978). Iranian troops then exiled Barzani and his followers into the Soviet Union in 1947, where he stayed for eleven years. In 1946, the British Empire gave independence to the Iraqis, once again under Hashemite rule, but this time also gave up their military bases to the Iraqi Army. After 1946, the Diyana Aerodrome was turned over to the Iraqi Army and subsequently abandoned in the 1970s.

Gird-i Dasht

Gird-i Dasht dominates the Diyana plain, and its truncated tabular shape is indicative of a fortress. This mound controlled overland traffic in the Diyana plain and the ceramics indicate a period of habitation spanning from the third millennium B.C.E. to present day (Danti, in press; Danti, 2014a; Danti, 2014b). Local informants link the final occupation of the mound to the Soran Emirate and report a *suq* atop the mound (Dantim in press; Dantim 2014a). Traces of late mudbrick walls and possible towers were present on the surface, possibly indicating this *suq*. A man-made subterranean channel with a stone outlet provides water to the site, and local informants link this construction to the Islamic period. Pottery on the top

of the mound was similar to that found at Qalat Lokhan and dates to the Sorani Emirate (1501–1835).

The mound stands 20 m above the plain, and has a total area of 1.6 ha (Danti, in press; Danti, 2014a). An earthen ramp stretches from the lower northeast corner to the upper southeast corner, leading to an entrance to the fortified settlement of the Islamic era. Two operations were opened in 2013 and expanded in 2014. Operation 1 is located at the top of the mound, and in 2013, RAP uncovered a fortification wall surrounding the edge of the mound that dated to the Uqaylid and Seljuk/Early Zenjd Periods (990–1153) based on radiocarbon dates (Danti, 2014a). Operation 2, located at the base of the mound, uncovered mostly second millennium ceramics as well as a mudbrick or rammed earth wall surrounding the base of the mound. A layer of Islamic midden covered the wall and was probably wash from the top of the mound (Danti, 2014a).

In 2014, Operation 1 was expanded towards the center of the mound, and more modern architecture was uncovered (Danti, in press). This consisted of mud-brick walls preserved to three courses high with plastered inside faces, and concrete floors. According to local informants, a small Iraqi military encampment was stationed on the mound, the highest point in the plain, during the Iraq-Iran war. North of the building was a poorly laid concrete toilet with a pit beneath but no cesspit (Danti, in press). One belt buckle was found alongside multiple razor blades, plastic food wrappers, and tins for food. Gird-i Dasht's prominent position in the Diyana plain with its viewshed of two routes to Iran and one through the gorge and eventually to the plains of Erbil, makes it a prime location for military encampments (Danti, in press). This encampment was probably placed there during the Iraq-Iran War (1980–88).

Figure 7: A) Possible tail of a mortar shell (Danny Breegi). B and C) Fortifications on hill tops in the Soran District (Marshall Schurtz). D) Rowanduz Gorge showing deforestation and subsequent replanting (Allison Cuneo).

Iraq invaded Iran in 1980, following long-standing border disputes, and the fear that the Iranian Revolution of 1979 would spill into the Shia population of Iraq and incite them to rebel against the Baath Party (Bulloch & Morris 1992; Fryer, 2010). The war ended in 1988 with the UNSC Resolution 598 that returned the borders to those set by the 1975 Algiers Pact. The Kurdish Peshmerga forces of the KDP and the PUK both sided with Iran against Iraq (Marcus, 2009). Because of this, as well as the Kurdish history of relations with Iran, Saddam Hussein launched a campaign against Iraqi Kurdistan known as the Al-Anfal Campaign (1986–89) (Human Rights Watch, 1993). Thousands of civilians were killed during this campaign, and the attacks destroyed approximately 4,000 Kurdish and 31 Assyrian villages and displaced at least one million Kurdish people. This campaign ended with the chemical attacks on the city of Halabja (Human Rights Watch, 1993). According to the Human Rights Watch, 4,000 out of 4,655 villages in Iraqi Kurdistan were destroyed, up to 100,000 civilians were killed, and 90% of Kurdish villages and targeted areas were destroyed (Human Rights Watch, 1993).

The encampment at Gird-i Dasht had a strategic location based on the viewshed. It not only overlooks the Diyana plain, where much of the population of this region lives, but it also has views of the passes into Iran. Modifications were made to the site, including more fortifications, but it lacks large gun emplacements like those for anti-aircraft shells. Gird-i Dasht may have just been a defensive position for the military, and a place to watch the surrounding region. Many of the trees were cut down on the hillsides to help with visibility, and this deforestation is still visible today.

The Rest of Soran District

During archaeological survey in the region, we discovered that almost every hilltop contains traces of warfare. Many of these hilltops were fortified with stone walls and sniper pits, and a few have anti-aircraft gun pads. Mine fields are present throughout the region, planted by both Peshmerga forces as well as Saddam's forces and it is important to practice extreme care to avoid these areas (Recchia, 2014). Modern day surveys turn up artifacts of warfare like bullets, casings, anti-aircraft missiles, and sandbags. These more recent conflicts are hard to distinguish archaeologically from the previous 20 years of warfare. Local Peshmerga have informed us that caves are also heavily used as hideouts and living quarters for forces both in past conflicts and in present day. RAP has not surveyed any cave sites as of yet, but they may yield large assemblages of artifacts from the past 100 years of conflict.

With the relative peacefulness of the past ten years, the Kurdistan Region

of Iraq is economically booming (Wanache, 2005). The influx of money from oil, as well as prospecting for new oil sources, has led to rampant development. With the establishment of the no-fly zone and the relative autonomy given to Kurdistan in the past 20 years, Kurds are returning to their homes from Iran, Turkey, and communities in Europe. This influx of new people also increases the demand for new agricultural, infrastructure, and housing development (Wanache, 2005). The KRG Department of Antiquities was founded in 2010 in order to help mitigate the destruction of archaeological sites from this new development (Danti, in press; Danti, 2014a; Danti, 2014b). Part of RAP's goals include helping the Soran Directorate with these evaluations, based on surveys and emergency excavations. RAP's cultural heritage program, borrowing from the Mosul Archaeology Program (https://mosularchaeology.wordpress.com), will help to assist the directorate and train its employees in new survey methods and excavation, in addition to creating public outreach activities on Kurdistan archaeology for the local communities (Danti, in press; Danti, 2014a; Danti, 2014b).

Future

This paper has discussed the recent history and subsequent archaeology of the Kurdistan Region of Iraq. Cultural heritage should encompass all periods of habitation, recording all activities for the future. The Kurdish population is memorializing the past warfare by constructing statues of Peshmerga fighters, reconstructing Ottoman and Sorani era forts and buildings, and teaching the history of Kurdistan in school, especially that of the Sorani Emirate. Saddam destroyed much of Kurdish cultural heritage in order to create a singular and seemingly unified narrative for Iraq, but since the creation of the autonomous region of Kurdistan, many Kurds are interested in redefining what makes them Kurdish, by remembering their fight for freedom. The proposed museum in Soran/Rowanduz is an attempt to showcase artifacts from millennia ago, as well as modern artifacts in order to memorialize the region's difficult path toward a better future.

In addition to excavation and survey, RAP has an integrated cultural heritage program to connect with the local populace. The local community shows interest in RAP's work by joining site tours and stopping by archaeological sites while work is in progress to ask questions. Furthermore, the Kurdish media has been actively involved in promoting archaeology and several stations have visited the sites where fieldwork is currently taking place. In order to promote this interest, RAP has supported community outreach efforts. For example, heritage specialist Allison Cuneo (Boston University), has created informational materials for the Soran Antiquities office, creating a pamphlet and a booklet that have been translated into Kurdish and Arabic about RAP's work and the history of the region. This information helps to inform the local villages of the archaeology taking place in their communities, as well as providing an opportunity for the team members, antiquities staff, and local population to engage in a proactive, positive, and unassuming manner. During the next season, we are planning on creating signage for the excavated sites, giving tours to local school children, and having community outreach days in both Soran and Sidekan to showcase RAP's findings and preliminary results. This approach will help to solidify contacts between our team, the antiquities office, and the local populace as well as informing the local communities about our research. The modern archaeology of Kurdistan showcases how prolific warfare is across the region, and even though this history is ingrained in the minds of the Kurdish population, archaeology has the ability to incorporate Kurdistan's past into a regional and global narrative.

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Figure 8: Reminders of Warfare in Modern Kurdistan. A) Male and Female Peshmerga Statues in Rowanduz (Danny Breegi). B) Blast walls in front of the Sheraton in Erbil, painted with different Murals. C) Abandoned Tank from the 1991 Iraqi-Kurdish conflicts on the road to Rowanduz. D) Mural by the Citadel in Erbil commemorating Alexander the Great's battle against Darius.

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The Reincarnation of the Damned Qajar Palace: From Palace to Prison, from Prison to Museum

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Abstract

In November 2012, the Qasr Garden Museum officially opened and was announced as an important tourist attraction zone for Tehran. This event marked the third reincarnation of this building since its construction. Constructed in 1807 under Qajar's rule, Qasr-e Qajar, which meant "Qajar Palace," is commonly referred to as Qasr. After it was transformed into a prison in 1929 under the Pahlavi state, the palace served as the most important prison of Tehran in Reza Shah's era and it became an important symbol of the socio-political struggles of Iranian society. After the 1979 revolution, and once the new state was settled, the building did not serve as a political prison anymore, aiming at a display of an act of detachment from the past. In 2003, the prison was shut down, and turned into a garden museum. Through the narratives of the life and transformations of this building, which is a traumatic site indexed to the very recent history of the nation, I aim to focus on the relationship between museums, politics, and collective memory in urban cultural landscapes. How does a site of suffering function as a touristic attraction? What is the characteristic of the nationalistic narratives created out of this space, and how does it reconstruct the collective and shared memory?

Introduction

"Oh, if liberty would sing a song,
little,
as the larynx of a bird,
nowhere would there remain a tumbling wall.
It would not take years,
to learn,
that every ruin signifies human's absence,
for the presence of human,
is rejuvenation."

-Ahmad Shamlou[1]

In a short film produced about Qasr Garden Museum by the Company of Development of Cultural Spaces, a division of the Department of Social and Cultural Affairs of Tehran Municipality, the narrative of the transformation of Qasr from prison to museum starts with a description of Tehran, as the young capital of ancient Iran with thousands of gates toward Iran's mysterious past; a past that is forgiven and at the same time saved in the arms of this generous town.[2] The narrator further expresses that Tehran, this affectionate "lady-town," witnessed a rhetorical question on the face of its inhabitants: "for how long this 'ruin' is going to be our neighbor?" Accompanied with portraits of citizens suffering in the neighborhood of this ruined complex, the narrator stated: "for years this kind "lady-town" with the bewildered eyes of her "children" was tolerating the fatigue of a ruined complex over her chest; but she knew that a fresh dawn chases away every dark night."

With the order of Fath Ali Shah Qajar, famous *memar* (traditional Iranian architects) were instructed to build this palace in Tehran in 1807. Named Qasr-e Qajar, which meant "Qajar Palace," the name was later shortened to Qasr. After it was transformed into a prison in 1929 under the Pahlavi state, the palace served as the most important prison of Tehran in Reza Shah's era, and held an enormous number of political prisoners, who were supposed to be kept in the capital. The prison became an important symbol of the socio-political struggles of Iranian society under the rule of the Pahlavis. Therefore, after the 1979 revolution, and once the new state was settled, the building complex did not serve as a political prison anymore (an act of detachment from the past). In 2003, the prison was shut down, and turned into a garden museum. In November 2012, the Qasr Garden Museum was officially opened, and promoted as an important tourist attraction zone for the capital city of Tehran. This event would mark the third reincarnation of this building since its construction.

This paper focuses on Qasr, which is a piece of architecture that is not only deeply woven into the urban fabric of the city, being a problematic site in some phases of its life, but also as a multi-temporal physical entity, present in the memory of the intellectual, political, and social history of the country. Through the narratives of the life and transformations of this building, a traumatic index of the very recent history of the nation, I aim to illuminate the relationship between museums, politics, and collective memory. How does a site of suffering function as a tourist attraction? What is the essence of a romanticist approach in preserving the sites of horror and turning them into museums, creating bonds to the heritage of a nation? What is the characteristic of the nationalistic narratives created out of this space, and how does it reconstruct the collective and shared memory?

Due to the active presence of Qasr in the modern literature of the country, being voiced in books of travel, biographies, memoirs, and poems, one is able to sketch the position of Qasr in the collective memory of the nation only through fragments of literature. As a result of the very recent transformation of

[1] Ahmad Shamlou (1925–2000) is an Iranian contemporary poet, who was imprisoned in Qasr prison in 1954. The verses provided here are translated by the author from one of Shamlou's poems, *Taraneh-ye Bozorgtarin Arezoo* (The Song of the Greatest Wish), from his book, *Doshneh dar Dis*.

[2] http://qasr.ir/ (accessed: Dec.10 2013); The movie is accessed through the online visual gallery of the website of Qasr Garden Museum, and the narration on the video is translated by the author.

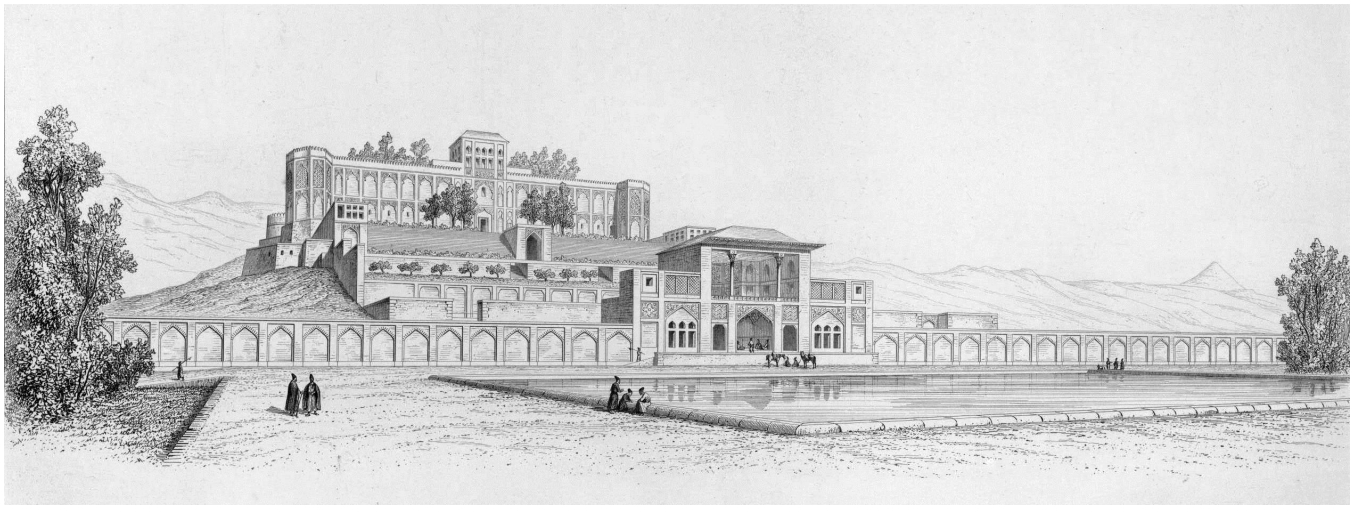

Figure 1: Qajar Palace in the sketches of Pascal Coste, in 1840. Source: http://en.wikipedia.org/ (accessed: Nov.12 2013)

this building complex, it is clear that there is no consensus on how this site of a nation's suffering should be properly dealt with within the complex urban context of Tehran. Through this paper, I aim to discuss the issue and try to elucidate the purpose and function of this transformation from prison into museum.

From Palace to Prison

Sir Robert Ker Porter, an English diplomat, artist, and author, describes Fath Ali Shah's summer palace of Qasr-e Qajar, which he saw during his years of travel in the east from 1817 to 1820, as follows:

> It stands on an eminently pleasant point of the adjoining mountains, being built on a detached and commanding hill, on the great slope of the Alborz. The edifice is lofty, and when seen from a distance, presents a very magnificent appearance. The stateliness of the structure itself, is very much increased in effect, by the superb range of terraces, which connect its spacious gardens, as they diverge from the base of the building downwards, towards the bottom of the hill. (Scarce, 1983, p. 329)

From the early 19th century, when the palace was first built, there is not much material in hand, other than the travel books and sketches. William Price, another English orientalist, admires Qasr-e Qajar in 1812, as follows:

> The Palace of Qajar, is a noble pile of building situated on an eminence, about half way between Tehran and Shemiran, surrounded by beautiful gardens, to which an aqueduct conveys water from the mountains. The beauties of nature and art, richly blended, make this one of the most delightful residences in Persia… (Scarce, 1983, p. 337)

Constructed during the reign of the Second Qajar king of Iran, Fath-Ali Shah (reigned between 1797–1834), Qasr-e Qajar is among the oldest palaces of the Qajar Dynasty. As part of the king's attempt to construct secular buildings outside the city walls for his divided summer and winter residences at varying distances from Tehran, Qasr-e Qajar was built on top of a beautiful hill outside the Tehran of the time. Plans and drawings from travelers' accounts of Persia illustrate that the palace was surrounded by a huge garden with beautiful pools, fountains, and waterways, and was constructed as a series of symmetrical ascending terraces each contained within an arcaded brick wall, reaching the royal residence at the summit (Scarce, 1983, p. 337). The rectangular two-story building of the residence has a nearly-blind facade on the exterior and the rooms open onto an interior courtyard.

Although the ruins of the splendid edifice of Qasr-e Qajar completed by 1807 did survive for a long time, the palace was allowed to fall into decay during the reign of Nasser od-Din Shah (reigned 1848–96), as he preferred not to renovate any of the previous establishments but to build anew (Scarce, 1992, p. 82–90). It is evident in historical narratives that this palace was abandoned almost fifty years after its construction. As an abandoned palace, this building was used in later periods for various temporary functions, including as a military house and storage. The building complex did not have a long life as a palace, but rather was condemned to a damned life in abundance and transition since it was built with special characteristics, slightly different from other palaces. It had a high number of small and narrow rooms, and it was designed in a way that the building had a distinct separation from the outside world, with a facade that had a very small number of windows looking outside. Therefore, some might consider that the edifice looked more like a fort rather than a palace, the reason that led to the selection of this building as a prison in later periods.

With the shift of power from the Qajar Dynasty (1785–1925) to the Pahlavi Dynasty (1925–79), the new state was determined to solidify its power by oppressing the opposition. When Reza Shah Pahlavi (reigned 1925–41) seized control of the state, the police station of Tehran had a small prison consisting of two or three small rooms and one larger room for public prisoners in the basement (Qasr, 2013). However, this building was not sufficient for holding the great number of political prisoners, created as a side product of a state of coup, emerging after a period of instability when the world was experiencing the

Figure 2: Qasr Prison during the Pahlavi era. Source: http://www.iichs.org/ (accessed: Nov. 10 2013)

Figure 3: Inmates of Qasr Prison in its courtyard, being preached by an imam during the Pahlavi era. Source: http://www.iichs.org/ (accessed: Nov. 10 2013)

aftermath of World War I. The place designed as the new prison for Tehran was none other than the abandoned Qajar palace, on top of a hill, and isolated from its surrounding by its blind facade. To meet the increasing demand for prisons, the abandoned Qasr-e Qajar, with its vast site in the northern parts of the city, was chosen to host one of the most famous prisons in the country. Russian architect Nikolai Marcoff, a fellow officer and close acquaintance of Reza Shah, who was fascinated with Persian architecture, was commissioned to construct the Qasr Prison on the site of Qasr-e Qajar, where a ruin and small portions of the edifice were still preserved (Marefat, 1992, p. 105).

A large, tall building resting on the hilltops next to an army barracks, Qasr was officially opened by Reza Shah in 1929, and became the symbol of both Pahlavi and the new judicial system (Abrahamian, 1999, p. 27). Qasr became a symbol of the modern penitentiary system in Iran and gained an important position in the collective memory of the city—a fame that was not comparable to similar palaces in the city, some of which remained functional and others which were later converted into museums. Qasr Prison was the first long-term penitentiary workhouse in Iran. In the late 1970s, almost fifty years after its establishment, Iran was estimated to have six thousand prisons spread throughout the country (Rejali, 1994, p. 55). Unlike its other counterpart palaces, Qasr still lives in Iranian literature, specifically through personal memoirs and biographies. The presence of Qasr in the narratives of Persian literature is widespread, and it is possible to document the footprint of Qasr in numerous poems, novels, and the prison literature of the country.

From Prison to Museum

> The compound eventually became a study in architectural dissonance. Its gracefully domed gateways and their ornate curlicues chipped by the neglect of many years, the handsome ochre-colored, bricked walkways, the shapely pond set in the spacious yard like a jewel—all remnants of the palace and reminiscent of the compound's leisurely past—were in sharp contrast to the purely functional annex, added to accommodate a surge of prisoners. (Milani, 2000, p. 29)

The first phase of the prison opened in 1929 and had 192 rooms that aimed to host 800 prisoners (khabaronline, 2013), in a city that had 310,000 inhabitants, according to a 1932 census (Madanipour, 1998, p. 16). One of the interesting stories about Qasr is that two state officials, Timurtash and Firouz Mirza, who collaborated with Reza Shah in the building of Qasr Prison, were among the first inmates of the prison (Abrahamian, 1999, p. 44). Despite the later reputation of this building complex, it was the first modern prison of Iran that was clean, with sunlit windows, wide corridors, spacious courtyards, flowered gardens, running water, and shower rooms; after all, like most other instances of Pahlavi architecture, the western penitentiary system was Iranianized in Qasr (Abrahamian, 1999, p. 27). In its first year, the prison housed 300 prisoners, 18 of them political. By 1940, it housed more than 2,000 prisoners, 200 of them political (Abrahamian, 1999, p. 28). With the rise of the number of political prisoners at Qasr, it soon became the main political prison of the country, and was called *faramooshkhaneh* (house of being forgotten). It was detached from the outside world in such a way that the outsiders were supposed to forget about the insiders, and the insiders were supposed to forget about the outside world. With its thick, tall walls, covered with barbed wire, the executions that took place in the courtyard of the prison were concealed from outside view.

With a high number of inmates including intellectuals, writers, poets, physicians, and university students and with the Shah's 1938 ruling that allowed them to have "non-political" books, Qasr, the "Bastille of Tehran," was turned into a lively university; inmates exchanged classes on languages, literature, philosophy, medicine, chemistry, physics and many other fields (Abrahamian, 1999, p. 68). Bozorg Alavi, a famous Iranian writer imprisoned in Qasr for communist activities from 1937 to 1941, states that he turned into a professional writer and was ascribed a political position during his stay in Qasr, "the house of remorse," as it was commonly known under Pahlavis rule (Raffat, 1985, p. 66–7). The prison had turned into an emblem of resistance for both society and intellectuals against the dictator state, but at the same time it produced great fear among citizens.

> One of the prisoners here, a tribesman, had served out his sentence. Before his release, though, the chief of police decided to bring the matter to the attention of the Shah himself. They say the Shah was so taken aback at what he heard that he exclaimed, 'Do you mean to say that the man is still alive? Clearly, Qasr is no prison but the Hotel de Paris!' (Raffat, 1985, p. 161)

One of the famous Qasr prisoners of Reza Shah's period, Farrokhi Yazdi (1887–1939), who was a pioneer of revolutionary literature, poet, journalist, and *Majles* (parliament) deputy, and whose lips were once sewed shut by Reza Shah's state with thread and needle, died in Qasr in 1939. While in prison, he continued to write anti-dictatorship poems and distributed them among other prisoners, until he was finally poisoned and killed. The walls of his cell were covered with odes and sonnets about injustice. From the only long ode that he had written about Qasr, only one verse is left, which starts with naming the prison as the "stonyhearted castle of Qajar" (Qasr, 2013). It is no surprise that the cell in which Farrokhi Yazdi spent the last years of his life, was renovated and opened to the public after the jail was turned into a garden museum, and consequently became a central attraction. After he was taken to a clinic to be murdered by the physician of the prison, the following poem on the wall captured the attention of one of his fellow inmates:

> Our hearts have never trembled for fear of the enemy;
> they have never been filled with terror by those who wear the crown.
> I would forfeit my life for the lives of those,
> who would forfeit their own and never yield to the enemy.
>
> (Gheissari, 1993, p. 43)

During the second Pahlavi era, the number of political prisoners, specifically leftist groups, rose dramatically, and organized torture became commonplace in various prisons of the country, including Qasr. In the 1970s, the government added two new inmate blocks to Qasr, one for women, and another one for political prisoners, and secured it modeled after those in the United States (Abrahamian, 1999, p. 105). By the mid-1970s, the new Evin Prison supplanted Qasr, with even harsher conditions. Qasr was now considered a place of rest compared to Evin (Abrahamian, 1999, p. 108). However, it is possible to state that the concept of political prisoner, kept separate from regular prisoners, was developed in Iran during the Pahlavi era.

After the 1979 Iranian Revolution, in the very first days of the new regime, Khomeini set up Revolutionary Tribunals to punish prominent members of the old regime; the Tribunals were set up in the major towns, and in Tehran there were two, in Qasr and Evin (Abrahamian, 1999, pp. 124–5). In many of those executions, the concept of defense attorney was dismissed as a "western absurdity", the judiciary was being Islamized, and the trials were limited to brief hours and sometimes minutes (Abrahamian, 1999, p. 125). Prime Minister Hoveyda was also sent to Qasr Prison; the same prison that not long ago had housed the people who were now sending him to jail (Milani, 2000, p. 29). The name of the prison, being Qasr, meaning "palace" in Persian, was ironic, implicit in the place of Hoveyda's captivity, as it was in the rhetoric of prison days of many other political prisoners, even during the Pahlavi regime. Indeed "Qasr Prison" has always been a combination of contradictions, even in its name.

Azar Aryanpour, in her memoir referring to the post-revolution days with her husband's traumatic experience as a political prisoner, describes her experience with Qasr: "The Qasr Prison repairs were almost finished. The same people, who only weeks ago had attempted to destroy this place, like the rest of the prisons, and free the prisoners, had now restored it to accommodate new 'tenants'" (Aryanpour, 1998, p. 149).

Qasr was among the first prisons that were liberated by the revolutionary forces during the course of the 1979 revolution, and masses of people ran into Qasr, to welcome their imprisoned families and celebrate their freedom. However, right after the revolution, the revolutionary forces repaired the prison and restored it for the new political prisoners.

After the immediate executions of the post-revolutionary era, Qasr was not used to house political prisoners anymore. Political prisoners were moved to other prisons of the city and it became a prison for general criminals. The moving of political prisoners to other facilities can be interpreted as an act of the new state trying to distance itself from the traumatic recent history of the country, and the previous regime. According to the Iranian Cultural Heritage News Agency (CHN), "the prison used to remain a major problem in District 7 of Tehran Municipality for 20 years which had created multiple troubles for the residents" (CHN, 2012). In 2003, it was officially announced that Qasr Prison would be evacuated by the end of the year, and would be handed over to Tehran Municipality to be converted into green space or an educational center. It was decided to turn Qasr into a garden museum, and it was considered as a future prime cultural attraction for the city. As stated by the officials of Tehran Municipality:

> Qasr Prison Museum would be turned into one of the important cultural-recreational centers in Tehran. In this garden-museum over 63,000 square meters of Persian garden has been established by taking advantage of genuine elements of the Persian garden.

Figure 4: A view from the Revolutionary Tribunal in Qasr Prison in the early 1980s. Source: http://www.namian-danesh.ir/forum-f147/ (accessed: Nov. 11 2013)

> With the implementation of Qasr Garden Museum project not only the problems were removed, great attention was also paid to the valuable architectural, social, cultural and political specifications in it. The mobile fountain inspired by Fin Garden in Kashan with an area of 700 square meters has given a specific tenderness to the surrounding area. (CHN, 2012)

The Qasr Garden Museum project was commissioned to the Experimental Branch of Architecture, and opened to the public in 2012. The complex encountered a stunning reception by people, who came to visit the Qasr that they had either experienced themselves or heard about, with great terror and anxiety for many years. Qasr, with its several cultural events, including Nowrooz (Persian New Year) festival and an International Sculpture Symposium, was considered the most creative museum of the year in the country in 2013, less than a year after the building complex was opened to the public (archdaily, 2013).

Figure 5 [Top]: Qasr Prison in a state of ruin in the post-revolutionary era Source: http://farhangi.tehran.ir/ (accessed: Nov.09 2013); Figure 6: Qasr Garden Museum, hosting Nowrooz celebrations in 2013. Source: http://www.shafaf.ir/fa/news/ (accessed: Nov. 09 2013)

Museumification of Sites of Horror: (Un)veiling the History

As stated by Adorno, museums and mausoleums are connected, in that museums are like family tombs for works of art (Adorno, 1967, p. 175). Although Qasr Garden Museum does not exhibit artwork, it is still possible to observe the way its life has been terminated by being transformed into a museum; now it is no more a prison, it is the mausoleum of a prison. The nature of this freezing of the present moment is definitely rooted in a conscious distancing of the subject from the immediate past. In such a context, one does not know the reason behind one's desire to be present in that space; in search of a culture or enjoyment, fulfillment of an obligation, or in obedience to a convention (Adorno, 1967, p. 176). Nevertheless, none of these possible reasons can be dismissed in the analysis of Qasr, as a unique phenomenon of a contemporary site of horror and suffering, museumified, with the intention of forming a tourist attraction for the city. Rooted in a very complex socio-political history as well as a complex contemporary context, the building itself is a fragment of bits and pieces from various times, functions, and narratives.

The experience that is offered in the form of museum attempts to position the visitor in a critical distance of being an audience, in order to perform the selected narrative of a space that is planned to function as part of the cultural heritage of the nation. The palimpsest of layers of history in this space is reformulated and reorganized through the act of museumification in order to form a lens to view the past. On the side of the defenders of museum, it is only the death of the object in the museum that brings it to life (Adorno, 1967, p. 182). While the museumification of Qasr brings an end to the life of this urban entity, it is brought to another moment of life, as still, frozen; its complex and multi-layered history of narratives are released, but they are immediately captured back and set into a form, to be presented to the observer with sharply defined borders. The observing subject, as the social agency, is the one for whom the narrative is formulated.

The project of transforming the prison into a museum had the aim of transforming a building that not long ago was the site of torture, fear, suffering, and horror for many people into a complex, culturally significant site, with certain functional attachments such as a library, amphitheater, and galleries. Meanwhile, with the beautiful gardens, ponds, and water fountains flowing over the site, there is a clear attempt to inject tranquility and peace for observers. Once you enter the dark corridors, you face a wall covered with photographs of the victims of the prison, and walking into some of the cells, you are confronted with mock-ups of prisoners suffering at the hands of the previous evil regime. However, once you step out of the dungeon of the traumatic past, you enter the garden, in which you are supposed to face the peace and safety of the present. This dangerous romanticization of space paves the

way for a veiled and misleading understanding of the past. Indeed, everything in a museum is put under the pressure of a specific gaze and a way of seeing (Alpers, 1991, p. 29). In that respect, Qasr, as container of museumified objects, but also as a building that is the object of museumification itself, encounters an imposed gaze that serves for the double function of the museum—both unveiling and veiling its own history.

Apart from some paintings, posters and sculptures with themes of revolution, imprisonment and torture, the objects of the daily lives of the prisoners, such as their beds and dishes, are displayed in Qasr. This reveals the paradox of showing items that were never meant to be displayed; the objects that became ethnographic objects of display through the processes of detachment and contextualization (Kirshenblatt–Gimblett, 1998, pp. 2–3). The prisoners' writings on the walls of their cells were produced neither as works of literature, nor as objects of display. While museums were previously defined by their links to objects, today they are defined more than ever by their relationship to visitors (Kirshenblatt–Gimblett, 1998, p. 138). In the case of Qasr, this central role of the visitor is questionable as the visitor is the central element through the movement of whom the "experience" of an immediate past is to be conveyed. Not surprisingly, the visitor of the museum is not free in that experience, and the person is provided with a selected narrative, as well as a predefined experience. Once the prison is turned into a museum, it is circumscribed with a well-defined identity, meaning, and target.

In Qasr, what is being commodified is not limited to objects displayed in the museum, but extends to the life and narratives of that space. It is not only the commodification of objects that prevents our hearing of their multiple authentic voices, but also the politics of the displayed items that leads to falsity in the context of public presentation (Crew & Sims, 1991, p. 160). In Qasr, the direct influence of politics on the transformation of the space has left almost no space for the interpretive action on the side of the observer. The drastic complex layering of the past, as briefly narrated in this paper, has been narrowed down selectively to a single image of one portion of its history, framed by the act of museumification, which reveals the "distancing" and "masking" effects of this practice in the context of a post-conflict society.

Reconstruction of Memory: Dealing with Uncomfortable Heritage

The significance of politics of remembrance and recognition of victims is another aspect that helps us understand how Qasr has been instrumentalized in recent years. While Qasr is present in the memory of the city, and while many people who have firsthand experiences with this space are still alive, the act of its conversion into a museum is a unique case of an attempt to reform collective memory before it is past. In other words, before the fragments of memories of this space would organically form a shared memory, there is a will to filter those memories and construct the shared memory anew. In this process exclusions are not ignorable; in that, a prerequisite of formulating a master narrative among all the chaos of fragmented stories of this space, is a dismissal of other narratives. Collective memory offers insight into how subjectivities align along common experiences, such as a museum visit, to create expressions of collective meaning (Crane, 2006, p. 99). Qasr Garden Museum is loaded with a new meaning, which is not merely shaped by the historical process, but is indeed molded in the frames of the will of the power.

The contradictory nature of distancing one from the present, in order to build a selective and trimmed memory of a certain traumatic space, is significantly important in this context. Not surprisingly, this transformed space is expected to preserve the bonds of society with its history and memory. Meanwhile, this attempt of controlling the past is crucial for the ruling elites of any society, reminiscent of George Orwell's famous statement in 1984, "who controls the past controls the future; who controls the present controls the past" (Orwell, 1950, p. 248). That is, the strong investment on controlling the past and the construction of a collective memory through creation of a master narrative, is indeed an investment in controlling

Figure 7: A view of an interior corridor of Qasr, showing a wall covered with photos of former inmates, including a former president and the current Supreme Leader (Source: Zohreh Soltani); Figure 8: A view from the interior of Farrokhi Yazdi's cell in Qasr (Source: Zohreh Soltani)

the future. Following questions immediately rise out of this context: what is the role of this museum, as part of the "uncomfortable heritage" of the nation in the construction of collective and individual memory? Is it a way of dismissing the traumatic past, or keeping it alive, as the potential danger?

The question of "memory" is problematized in the context of the adaptive reuse of spaces. The inherent transgressiveness of the space in the life of Qasr creates an awkward coexistence of various memories. The question of the ambiguities in memory caused by a delimited transgression of space, ends up in having all the contradictory memories about this space, challenged by the overwhelming will of the power in creating a shared memory on top of all those contradictions, by the act of turning it into a museum. Museums represent a stable reference point of cultural heritage but they also, ironically, are the institutions that are committed to represent the mechanism of change (Crane, 2006, p. 99). The superimposition of a voice, over the existing past in Qasr not only modifies the memory, but it also highlights the existence of a change, which aims to remind one of the traumatic past in the paradoxical context of the peaceful present.

As the degree of the perception of an exhibited work in a museum is dependent upon shared knowledge between the artist and the audience, in the engagement of the visitor of a space like Qasr with the museum, there is an investment in a shared memory. The instrumentality of Qasr as a museum, with its active reconstruction of the past, targets the visitor. In other words, this museum, more than many other forms of museum, is an active agent of political legitimization. Huyssen's argument about museums as a mass medium refers to the contemporary museum as our own *memento mori*, and thus as a testing ground for reflections on temporality and subjectivity, identity and alterity (Huyssen, 1995, p. 16). I would argue that in the case of Qasr this testing ground is so tightly bound with a dominant narrative, that turns the subject into an inmate of its single narration.

Epilogue

The official representation and narrative of this urban "scar," through the film produced for the opening of the museum, provides an official reading of this transformation.[3] Melancholic aerial views of Tehran are followed by shots of the distressed faces of the middle and lower class citizens of Qasr's neighborhood in their daily lives, while the voiceover of the film offers a narration in which Tehran "herself" is a living, self-conscious entity that suffers from the ruin of Qasr and demands to be released from the "evil celebrations of undesirable weeds that were conquering the Qasr more and more every day." A space overflowed with dust and ruin, "that was resembling the mortified bones of Qajar princes and Pahlavi army officers," was given a fresh breath with the project that was going to heal this "scar" on the body of the "lady-town", by turning it into a museum. With the great endeavor and struggle of artists and artisans the ruin of a damned palace and a horrifying and agonizing prison turned into an "illuminating house of life lessons and self-reflections."

The concept of museum as an end point to the life of an object or space is reflected in the narration of the film about Qasr's transformation by stating that "Qasr is not the prison of human anymore, but it is the prison of time." The romantic fascination with the ruin and its utilization for being a reminder and alert of the dark past and the evilness of the previous power is highly visible in Qasr's project. To protect and reform the evidence of the violence of the past against the ravages of time, Qasr was subjected to a project that was as ideological as it was physical. The exigency of a reconstruction and redefinition of the past through engagement with the ruins seems to be an unavoidable circumstance in order to maintain the power of ruling the present and the future.

The transformation of this prison into a museum, being an act of urban rejuvenation that would turn the neighborhood around the prison into a touristic zone, was accomplished by a precise plan involving the legitimization of the present and questioning of the past. With views of children cheerfully playing around the green spaces surrounding the museum, the film concludes with the bright days of Qasr serving as a museum. The Qasr project is announced as the messenger of hope for all the cities of Iran, from which the "scars of the past" can be eradicated. Qasr is providing an instance of a true romanticization of space for the sake of a reconstruction of the past that would serve and legitimize the present. The cells of prison, that were keeping the "heroes" of the past, turned into hallways for works of art, and "hereafter no door in the garden will experience being locked."

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[3]The movie that is mentioned here is the movie referred to in footnote 2, and the direct quotes hereafter are derived from the voiceover of the movie.

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Dealing with Legacy Data: Lessons from the Ur of the Chaldee's Project

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Abstract

Legacy data, that being any data generated by archaeologists that has not been widely published, is one of the greatest opportunities facing archaeology. Decades of primary data from excavations across the world lies unpublished, the presentation of which provides great potential for multivocality and new interpretations of existing archaeological paradigms. This paper focuses on the Ur of the Chaldee's project, a Penn Museum and British Museum collaboration that is digitizing Woolley's excavations at Ur, and making the data available globally on the internet for the first time. Further, the project is creating a software package that will present the data from Ur and will be made freely available online to anyone who wishes to use it as a platform to present site reports, legacy data, or record heritage in peril. It is reflexively built and designed to accept any structure of data, making the project a landmark contribution to the preservation of cultural heritage in its accessibility.

Introduction

Archaeological research produces huge amounts of data in the form of material like photographs or context records which are normally condensed into a secondary site or preliminary report, where the excavators present their interpretation of the data. These interpretations are, when primary evidence is reassessed, generally found to be at best partial, and at worst inaccurate presenting a dominative narrative at the expense of multivocality (McDavid, 2014). Archaeology is a destructive process and a site that has been excavated cannot be excavated again. This means that regardless of how long ago a site was excavated and under what techniques, the primary collection of notes, sketches, and diaries are the only record of the destroyed cultural heritage. Ontologically without access to the primary data we lose part of our heritage and deny alternative voices or new interpretations. It should therefore be the imperative of cultural institutions, universities, and individuals to make their primary data available, preferably for free.

Historically, due to the vast scale of data produced and the cost of physical publication it has not been feasible to publish many archaeological sites in totality. It is only with the advent of the internet and low cost data storage that it has become even theoretically possible to make all the available primary data from an excavation publically accessible. The potential dividends from access to primary data are immense. By making the primary data generated by archaeological excavations freely available, new avenues of research can be pursued. Many organizations, like the Archaeological Data Service (http://archaeologydataservice.ac.uk/) in the United Kingdom or Open Context (http://opencontext.org/) in the United States, work toward making primary data freely available for the end user; however, there is a long way to go.

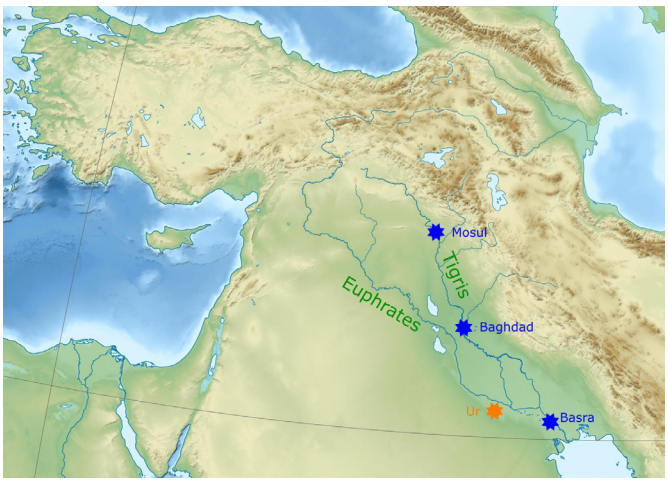

Figure 1: Map showing the location of Ur and three modern cities (Adapted from © Sémhur / Wikimedia Commons / CC-BY-SA-3.0)

The reach of primary data is also greatly enhanced by online access. While primary data have often been available to people fortunate enough to have the resources or who live in proximity to the repository of the data many communities, interest groups, and academics have limited access to their own archaeological heritage. Historically, western archaeologists working in other regions have tended to publish their results in their native languages, such as English or German, and not in the languages of the countries in which they work, further impeding accessibility. Taking the ancient site of Ur as an example, there are many authoritative publications about the site, from Woolley's many volumes (cf. Woolley, 1934a, 1934b, 1939, 1956, 1962, 1965, 1974, 1976), to the numerous reassessments (cf. Pollock, 1991; Baadsgaad et al., 2011; Crawford, 2014). However, none of these are in Arabic and more importantly few of them will be available in Iraqi universities.

This paper will demonstrate the work being conducted for the Ur of the Chaldee's project (www.ur-online.org) which aims to address some of the issues outlined above.

History of Ur

The following chapter briefly outlines the history of Ur and its discovery and excavation in the 19th and 20th centuries. The site of Ur (modern Tell el-Muqayyar) was a major ancient city located in southern Iraq, ancient Sumer (see Fig. 1). The site was occupied between the fifth millennium B.C.E. and the first

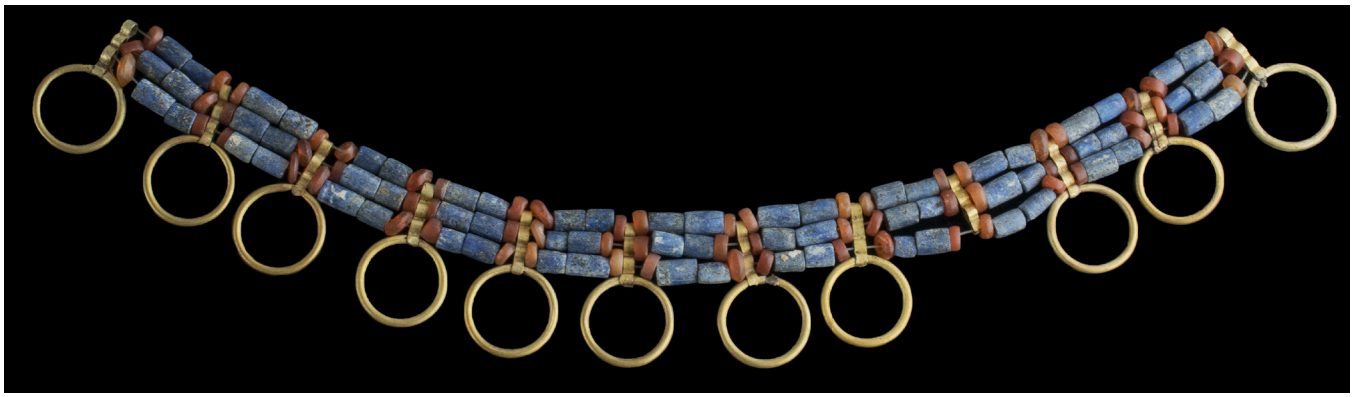

Figure 2: Gold, Lapis Lazuli and Carnelian diadem (BM 1929,1017.240) from Ur (Copyright Trustees of the British Museum 2014)

millennium B.C.E., but reached its fluorescence in the third and early second millennium B.C.E. when it became an important city-state in the south Mesopotamian urban landscape. The earliest evidence of occupation spans the prehistoric Ubaid period and the proto-literate Uruk period (5200–3000 B.C.E.).

Following the Uruk period, the Early Dynastic period (2900–2300 B.C.E.) occupation of Ur includes one of the most spectacular archaeological discoveries in the Middle East; the Royal Tombs of Ur. Excavations at the site unearthed over 2,000 graves, which including 16 "royal" tombs that displayed possible evidence for human sacrifice and were furnished with an astonishing quantity of exotic grave goods (see Fig. 2 for one example) acquired from distant lands (e.g., gold from Anatolia, carnelian from India, and lapis lazuli from Afghanistan). Ur was clearly an important city at the time, as attested to in contemporary historical sources (Matthews 1993), but we have little evidence of the nature of society at Early Dynastic Ur or who the people in the graves were. It is not until the following centuries (2100–2000 B.C.E.) when Ur reached its height as the heart of one of the most bureaucratic empires of the Middle East (Gibson & Biggs, 1991), with the so-called Third Dynasty of Ur, that we begin to understand more of the history of Ur. It was during this time that Ur was an imperial capital and that many important structures such as the ziggurat were built. Ur was sacked at the turn of the third millennium B.C.E., but continued to be an important city in the early centuries of the second millennium B.C.E. when it was part of the Isin-Larsa states (2000–1850 B.C.E.). After the fall of Isin-Larsa, Ur did not regain its former prominence. Control of the city passed between various regional powers before some further construction resumed in the sixth century B.C.E. under the Neo-Babylonian empire. The city was finally abandoned after ca. 500 B.C.E., possibly due to the silting up of the Persian Gulf or drought.

Beyond its archaeological importance, the city of Ur continues to be of symbolic significance in narratives of Middle Eastern history. From its association with the biblical Ur of the Chaldees, birthplace of Abraham, through its apparent evidence of the flood myth and its exceedingly rich material culture, Ur has held a central place in the construction of narratives of the cultural heritage of Mesopotamia and, by extension, Iraq (Crawford, 2014, pp. 1–15).

The site was initially excavated by John Taylor in 1853–1854, Reginald Campbell Thompson in 1918, and Henry R. Hall in 1919 before Leonard Woolley excavated the site between 1922 and 1934 through a project directed by the British Museum and the Pennsylvania University Museum (currently Penn Museum) (Taylor, 1855; Hall, 1930). It was the first site excavated under Iraq's first antiquities law written by Gertrude Bell and the objects from Ur, along with those from Kish, formed the basis of the Iraq Museum's initial collections. Half of the objects remained in Iraq, while the other half was divided between the British Museum and the Penn Museum, though there are also small collections in museums across the world including the Metropolitan Museum and the Royal Ontario Museum.

None of the primary data from any of the excavations at Ur is available digitally. Further, none of that information can be found outside of London and Philadelphia, the two cities that house half the finds from the site. The lack of available data means it is often impossible to pinpoint the exact location of an individual object as their unique identifiers, the so-called U-number, have often been lost or were never known in the first place. The initial purpose of the Ur Project was therefore to create a digital database containing all the U-numbers and records to allow researchers to locate objects. The secondary goal was to make sure that all objects stored at the Penn Museum and the British Museum were photographed, measured, and checked against the records. Thirdly, the project aimed to provide context for these objects through the digitization of the Ur archives, including about 70,000 file cards and field notes and the linking of these to the records of the objects themselves. In essence the purpose of the project was to digitally reunify the excavated material from Ur.

While there have been many reassessments of Ur over the years, they have been hindered by only having partial access to the objects and archives. Creating this database will be the first time that all the records from Ur are publicly accessible. We hope new stories in the cultural heritage and history of Ur will be created using newly found links between materials such as the excavation photos and field notes that have previously been overlooked.

The combination of digitzed excavation archives and archaeological objects will allow us detailed insight into the

excavations of Ur, and hopefully open many new avenues of research while granting access to this important cultural heritage. However, the digitization of Ur is only one part of the project, since one of our goals was to create a software package that could be used by anyone to document and record other collections. The development and features of this software are presented in the following chapter.

Software and its Capabilities

For the design of the Ur Project software called UrOnline, the project team identified eight key requirements necessary to its function. The following is a discussion of how the UrOnline application addresses these requirements from the perspective of the Ur Project and with the wider concerns about how the software might be used.

Our first concern was that the software needed to be able to store any sort of contextual or secondary data; not just the information on objects and their contexts, but also the field notes, the matrices, and discussion of strata that are necessary to allow accurate data reuse (cf. Faniel et al. 2013). After researching a few existing solutions we settled on a model created for Open Context, with a few modifications, resulting in a tripartite structure—"Entities," "Relationships," and "Descriptive Properties" (Kansa et al., 2007).

There are four types of entities: "People," "Media," "Contexts," and "Objects" (relationship summarized in Fig. 3). "Objects" are primarily artifacts. "Context" refers to contextual information such as graves. "Media" covers original notes, letters, publications, images, video, and any other documentation of the excavation. Finally, "People" refers to the persons or organizations involved in the excavation. Any of these entities can be related to the other three creating the "Relationships." "Descriptive Properties" refers to the attributes or properties, both free-form and controlled, that describe entities. Free-form properties can be given any value, while controlled properties can only have a value selected from a controlled list of all possible values for that property. In other words, when configuring a property, the user can decide how much control to exert over the possible property values. This is relatively structured, as in well-organized, yet at the same time simple and should allow for the storage of most data that could have been produced archaeologically.

A natural result of storing information in this format is that every entity is presented within a meaningful context. This leads to the second requirement for the application, understanding and analysing relationships between data that are unique to archaeology. As such the software will provide a tool to speed up analysis for researchers with features like the automatic aggregation of controlled terminology and the presentation of an object within a context, not simply as a lone piece of data in a spreadsheet. For example, context entities are displayed with a complete list of the objects found within that context and any publications, letters, or field notes that relate to that context.

The third concern was related to the diversity of evidence produced by excavations and the requirement that the software should be able to ingest and unify myriad forms of legacy data without data loss. In other words, the system must be flexible enough to store anything recorded in any format, and avoid limiting users to a pre-set collection of fields. The vast majority of the data uploaded to UrOnline so far has come from a large variety of sources with no standard storage format. The project has had to integrate data from storage formats including everything from physical notebooks to Filemaker databases and Excel spreadsheets. This is likely the case with many other excavations. In addition, both the original excavation and the current project are a joint effort

Figure 3: Illustration of the interaction between entities and relationships (Author's Copyright)

between two different museums which have collected a wide range of often disparate data. In the absence of widely accepted controlled vocabularies it did not seem feasible to wait for the field of archaeology to agree on a single set of properties to describe an object or context.

In response to this lack of standardization and need for flexibility, the software puts no restrictions on the types and number of properties an entity could have. This prevents data loss that could result from forcing a given source of data into a pre-existing immutable data schema. For example, if a study from the 1970s collected bead widths for a very small subset of objects, then only these objects will store data for this field and the field can be created at the time of data ingestion. This flexibility should also provide the potential for the system to be used to actively track the state of objects or sites under threat of damage, and to quickly document collections at risk using available metadata without worrying about immediate internal cohesion.

As discussed above, the major advantage of presenting legacy data is the much larger audience it can reach. The software does not assume the nature of this audience and thus must be able to accommodate both general and academic users. As one of the primary goals of UrOnline is to make excavation information available to anyone, we have anticipated a wide variety of users. To that end we have built in a tiered system for querying the data: with a simple keyword search, a guided search with suggested search fields, and a full query-building tool for advanced searching. In addition, it will be possible to access the data from any angle, drilling down through contexts, or via an institution (e.g., objects from the British Museum) or person (e.g., objects excavated by Max Mallowan) with the various entities displaying the relevant information with no attempt to force visitors down one path.

In an effort to further increase the ability of our application to share data online, as well as provide more context and meaning to our data by linking it with other data sets, we are incorporating linked open data features into the system, which is the fifth requirement of our application. For example, our application produces search results that can be exported in human readable formats such as CSV as well as computer readable formats (currently only available as JSON, but XML is anticipated). In addition, the system uses REST-ful URIs to reference entities for added permanency and to make it simpler to link to objects, contexts, etc. Controlled properties have also been linked to relevant archaeological ontologies such as the British Museum's Semantic Web. The system also allows objects, contexts, people, and media to be linked to other repositories of related data such as museum online collections databases and online journal repositories.

The sixth requirement of the application addresses data storage. It is unlikely that users will know the full extent of the data they would like to store at the beginning of a project. After developing this application, one of the most important lessons we have learned is that the system must be able to adapt and grow easily. As a result, we have produced an application that can be modified easily to fit the ever-changing needs of a project. This is exemplified by the lack of restrictions on what is recorded and publicly or privately displayed. As an example, an excavation team concerned about the dissemination of sensitive data that could compromise the safety of the excavation, could restrict access to such information by setting a login feature for private users, while other information could remain accessible via the public site.

If a project was interested in modifying the application, it could easily do so since the program requires a minimal understanding of Python and HTML. The application has been entirely constructed using Django, a web framework specifically built for quick and easy online publication. Many aspects of the public website template can be configured from the administrative settings menu, however, it would also be simple for users to supply their own HTML templates for the interface. Finally, the use of Solr, which indexes the data for searching, and ResourceSpace to store the digital assets makes the size of the data stored in the system limited to the size of one's server.

The seventh requirement of our project is to make the application available to anyone around the world who needs a free and easy way to record their excavations with minimal to no training. This is especially important as a quick solution for recording endangered cultural heritage, and is one of our primary goals for future development. We hope to make this application a solution for people around the world who feel unable to publish their archaeological data due to financial or technological restrictions. This includes creating a variety of data upload tools to improve the speed and ease of legacy data ingestion, so that contributors are not hindered by the difficulty of converting old data sets. One benefit to developing the application with Django is the built-in language tools. We hope to utilize these tools to offer multiple language support. Finally, enabling mobile support will make the application much more practical in recording threatened cultural heritage.

Finally, it was our desire to develop an application that would be free and open source. This requirement has been met using exclusively open source technology during application development. This includes MySQL (https://www.mysql.com/) for the database, Django (https://www.djangoproject.com/) as the web framework, Apache Solr (http://lucene.apache.org/solr/) as the search indexer, and ResourceSpace (http://www.resourcespace.org/) as the digital asset management system. Our project can benefit greatly from such free applications since the open nature of their code base allows communities to constantly test, change, and expand these technologies for future use. In a reciprocal gesture, our own code is freely available for download and use on Github, a web-based repository. Github will also form the main path of dissemination for the finished software package which is available at https://github.com/sashafr/uronline.

Conclusion

The title of this conference was *The Future of the Past*. Without a reliable platform or proper funding to present information from unpublished or partially published excavations, or small projects with limited funding, large parts of the past have no future. What we usually witness in our field is the publication of single, often biased narratives, constructed by academic

institutions that at the time of excavation had the permit to process and publish the finds. By presenting archaeological data in a largely raw manner, it will be possible for other researchers to find and interpret the data in their own way and construct their own narratives.

This is particularly relevant in the context of Ur and Middle Eastern archaeology in general. The Ur Project's origins lie in the aftermath of the second Gulf War and the looting of the Iraq Museum. It was in the face of these losses that archaeologists in Philadelphia and London realized the true importance of acquiring accurate information on the exact location of the objects from Ur. For example, there were objects registered on the database of the British Museum that are currently in the collections on the Penn Museum. This can be confusing for scholars searching for artifacts assumed to be at the British Museum, when in reality the objects are stored at the Penn Museum. Further, it is necessary to update the database with recent photographs and accurate descriptions of the artifacts in the unlikely event of damage caused by looting or destruction of museums.

The current political and social upheaval in large parts of the Middle East, largely caused by the rise of Daesh has resulted in the tremendous damage of cultural heritage on a daily basis. Safeguarding the cultural heritage of the region will be necessary in rebuilding identities after the war is over. The Ur Project is therefore committed to provide the Iraqi population for the first time with access to the primary data excavated and recorded at the site of Ur. Collaboration between the Iraq Museum and the Ur Project team was imminent before recent events. It is hoped a future collaboration with Iraq Museum curators will lead to the digitization of their Ur records allowing, for the first time, the complete presentation of the history of Ur.

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Ancient Near Eastern Material Culture Studies and Reflectance Transformation Imaging

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Abstract
Reflectance Transformation Imaging is a burgeoning photographic method for the documentation and analysis of material culture. Many previous photographic techniques used for the study of inscriptions and works of art, while helpful, failed to capture the fullest amount of data available to epigraphers, paleographers, and art historians. RTI utilizes dynamic light sources to produce images that can be digitally manipulated to reveal subtle details not detectable by examination with the naked eye or with the use of standard photographic procedures, thus preserving information that might otherwise be lost. This article highlights the potential that RTI has to facilitate access to ancient Near Eastern works of art and incised inscriptions. Several case studies demonstrate the benefits of this technology for academic research and for the preservation of and open access to cultural heritage objects. Exemplars include ancient Egyptian statues re-inscribed with Northwest Semitic inscriptions, several anepigraphic bullae, and Palmyrene funerary reliefs.

Introduction
Burgeoning interest in technologically self-aware approaches to the humanities, which often go under the rubric "Digital Humanities," is opening new avenues for both the preservation of and open access to objects of world cultural heritage. The best approach to studying material culture objects is in-person analysis alongside the study of images of these objects. Though this two-step approach is preferable, it is not always possible. Artifacts are often scattered in collections throughout the world so that scholars might be precluded from analyzing them on site for a variety of reasons, such as limited travel funds, the hesitancy of museums or departments of antiquity to grant permission for study, volatile political situations in regions where collections are located, or the loss or destruction of collections either in part or in whole. Collections from the ancient Near East have been increasingly exposed to such endangerment. Therefore the production of images of material culture objects is crucial both for providing access to them and for their virtual preservation. Innovative digital technologies, particularly those utilizing advanced photographic methods, provide increasingly sophisticated tools for the documentation and analysis of such objects. One such technology is Reflectance Transformation Imaging (RTI).

RTI utilizes dynamic light sources to produce images that can be digitally manipulated to reveal data not detectable by examination of static photographs or, sometimes, even images of an object itself. RTI images, then, have the ability to preserve information that might otherwise be lost. In what follows, we will present a brief introduction to the production of RTI images. We will emphasize the benefits of utilizing RTI for the advancement of scholarship as well as interdisciplinary collaboration in the analysis of RTI images and their respective contents. We will then demonstrate these benefits through a series of case studies drawing from our own work on material culture objects from the wide region of the ancient Near East, including Egyptian statues and Northwest Semitic inscriptions.

Reflectance Transformation Imaging: How Does It Work?
The interplay of light and shadow on material culture objects, particularly pieces that have been sculpted or incised, can both conceal and reveal their data. Traditionally, when studying works of art or inscriptions, art historians or epigraphers maneuver light back and forth across an object using a flashlight or similar light source. Data are often revealed by the very act of raking the light across the object. This is particularly useful when analyzing a damaged or worn object or text in order to identify iconographic details or to determine correct textual readings or letter characteristics.

Similarly, when studying an object through photographs, researchers have attempted to address the need to see the object in various lighting conditions. This has typically been accomplished by producing a series of images of that object, with each image capturing a view of it in a different vector of light. While this is helpful, sorting through a plethora of images is a tedious and time-consuming process. RTI simplifies this process by allowing one to analyze an entire series of images simultaneously. Furthermore, it is often the manipulation of a light source in real time that reveals new data, something that is not possible by perusing a catalogue of static images. RTI technology, on the other hand, enables researchers to recreate field-like research conditions remotely, thereby increasing the effectiveness of "home-based" study. That is, just as a researcher studying an object on site in a museum might use a flashlight to create various lighting conditions in order to reveal subtle details of an object's surface shape and texture, one can also use the dynamic light source available within RTI viewer software to reveal details of an inscription that are not visible in images taken from a single light vector.

The Production of RTI Images
RTI utilizes various mathematical algorithms to produce RTI files. These algorithms include Polynomial Texture Mapping (PTM), which was developed by Hewlett-Packard labs (Hewlett-Packard; Malzbender, Gelb & Wolters, 2001; Cultural Heritage Imaging, 2014, p. 8), and Hemispherical Harmonics (HSH), which was produced by an international team of researchers led by Cultural Heritage Imaging (CHI) (Cultural Heritage Imaging, 2014, p. 6; Cultural Heritage Imaging). While the finer mathematical computations and computer

Figure 1. RTI photo shoot with reflective sphere in camera's field of view. (Image by Heather Dana Davis Parker)

programming details utilized by RTI technology are beyond the scope of this paper, a brief discussion of the function of these algorithms, as well as a description and discussion of RTI photographic method, is warranted. A detailed discussion of RTI method and technology, as well as guidance to various software and RTI educational materials, may be found in Greene and Parker (2015).

During an RTI photo shoot, 45 or more static photographs of an object are taken. The camera may be oriented vertically over or horizontally in front of an object. All photographs are taken from a single position while both the camera and the object remain stationary. However, the camera flash (or other light source) is moved into various positions around the object over the course of the RTI sequence, creating a virtual dome of light over it. The light source remains the same distance from the object and a single image is produced each time the flash is moved. This allows the photographer to capture views of the object under a range of lighting conditions. Specially designed domes with multiple lights fixed in permanent positions may also be used, especially for smaller objects. Such domes have the added benefit of achieving consistent light coverage over various objects every time an RTI sequence is performed (Wagensonner, 2015).

Prior to imaging, one or two reflective (hemi)sphere(s), typically black or red in color, are placed near the object within the camera's field of view (i.e., the area visible through the camera lens) (Fig. 1). In each individual picture, these spheres capture and reflect the position of the flash in relation to the object being documented. When the shoot is complete, the images are processed through RTI builder software that detects the highlight of the flash on the sphere and, in turn, compiles all of the highlights into a highlight blend map. Using the relative positions provided by the blend map and either the PTM or HSH algorithm, the software plots the fixed points of the flash's position in the "dome" in each photograph, and then interpolates in a single PTM or HSH file how the light would shine and reflect off of each pixel in the photograph from various angles.

Once the component files are processed with the PTM or HSH algorithm, a composite PTM or RTI image is produced. When this image is analyzed in an RTI viewer, a researcher can manipulate the light source illuminating the object by moving the computer cursor over the image of the object, just as one might move a flashlight over an inscription, lighting and relighting the image as needed. When manipulating an RTI file, the user also has at his/her disposal various digital filters (or enhancements) that can transform the computerized view of an object, thereby increasing the amount of recoverable data. Several of these filters will be highlighted in the case studies that follow. (For a demonstration in real time, see https://youtu.be/9wfJ2WoEQ4E.)

Figure 2. RTI photo shoot of a Palmyrene funerary relief (PAT 0821) with flash attached to boom. Freer Art Gallery, Washington, D.C. (F1908.236). (Image by Nathaniel E. Greene and Catherine Bonesho)

Potential Obstacles for RTI Production

RTI technology is not without its limitations. The successful production of a series of RTI images is dependent upon the ability to construct an adequate light dome proportional to the size of the object. This construction can be adversely affected by a number of factors that can distort the final output of the RTI shoot due either to incomplete or inconsistent light coverage over the object.

The size of the object relative to the location where it is photographed can prove problematic. Smaller objects, such as the bullae from Khirbet Summeily (discussed below; Hardin, Rollston & Blakely, 2014), do not require much workspace and can be photographed in RTI domes (discussed above). Documenting larger objects such as Palmyrene funerary reliefs (Hillers & Cussini, 1996; Ploug, 1995; Colledge, 1976), however, can prove troublesome in areas with limited space where the photographer may not be able to position the flash at an adequate and consistent distance from the object. Furthermore, photographers might be required to work around other pieces within a collection and might be limited with respect to the positioning of the flash by those pieces or by walls, ceilings, and corners. Larger photographic equipment such as boom arms (Fig. 2) may also be required. Alternatively, one could photograph large objects in sections, treating each section like a small individual object.

An object's physical makeup can also affect the consistency of the light dome. If an object has an area that is carved in particularly high relief, portions of that object might be overexposed to light in some images. For example, the side of the head or mantle on busts of Palmyrene funerary reliefs tends to generate a "halo" effect when a raking light/flash is applied to the object. This "halo" effect is produced when the flash reflects off the side of the figure's protruding head or mantle, which creates an oversaturation of light on adjacent areas of the object. Conversely, the curvature of an object can present the opposite lighting problem: underexposure. Because the Izbet Ṣarṭah abecedary is incised into the convex surface of a pottery sherd, a raking flash cannot illuminate the entire surface area of the object at one time (Greene & Parker, 2015.) In order to avoid this problem, the photographer must perform multiple RTI sequences, turning the object and focusing on new areas each time to create multiple RTI files or images of it. Additionally, ambient light can compete with the virtual light dome, a challenge encountered when photographing objects both indoors as well as in situ in outdoor archaeological contexts. In such cases, one must make various adjustments to the camera before photographing an object. Applying neutral density filters can block ambient light. Also, during the RTI photo shoot, one can produce an "ambient light photograph" (i.e., a photograph where only ambient light is captured by the camera), which can later be used to subtract ambient light from the full batch of images during the final image editing process.

Despite these challenges, RTI is a forgiving process. With frequent and practiced application, a photographer is often able to accommodate most difficulties. As a result, RTI has proven to be an effective technology in the documentation and study of objects of cultural heritage import, as the following examples will show.

Documentation Provides Open Access to and Virtual Preservation of World Cultural Heritage Objects: Case Studies

The Kerak Fragment (Kemoshyat Inscription) (Fig. 3)

Our first case study highlights the value of RTI for capturing artifact details that, while visible to the naked eye, often go overlooked in the examination of standard photographs. The Kerak fragment, also known as the Kemoshyat inscription, is a fragmentary piece of granodiorite inscribed with three lines of ninth-century B.C.E. Moabite text. Currently in the Kerak Museum in Jordan, it was first published in the 1960s and has since appeared frequently in publication as an example of a Moabite royal inscription (Donner & Röllig, 1962–63, no. 306; Gibson, 1975–82, I, no. 17; Reed & Winnett, 1963; Parker & Arico, 2015).

That the inscription was added to the image of a figure wearing a pleated skirt has long been recognized (Parker & Arico, 2015, 107–9). The identification of the figure and its origin, however, have remained elusive. In order to address this issue, Ashley Arico, an Egyptologist and art historian, and Heather Parker, a Northwest Semitic epigrapher, undertook an interdisciplinary study of this piece, examining it as both a work of sculpture and an inscription. Based on recent reexamination of the piece in tandem with the production and analysis of RTI images of it, various details about the Kerak fragment have been clarified.

These details have allowed for a more nuanced identification of the figure. Of crucial import was their confirmation of the presence of a navel on the figure. Near the center of the fragment the navel is depicted by a circular depression. While this navel is somewhat visible on the photograph in the initial publication of the fragment by William Reed and Fred Winnett, they do not represent it in their line drawing of the fragment, nor do they describe it, indicating that they must have interpreted this indentation as an area of loss (Reed and Winnett 1963, p. 6). This view seems to have been adopted by other scholars, including Manfred Weippert, who produced a line drawing marking the indentation with the same scratches he used to represent damage elsewhere in his illustration, and Christopher Rollston, who leaves this area blank in his drawing of the piece (Weippert, 1964, p. 170; Rollston, 2010, p. 44). Our newly-produced RTI images of this object, however, especially those analyzed in the RTI viewer while utilizing the specular enhancement filter (Cultural Heritage Imaging, 2014, p. 9), now clearly show that this indentation was made intentionally and is not simply damage to the stone's surface.

Although a seemingly insignificant feature at first glance, the presence of a navel on this figure has allowed us to place the fragment within an artistic tradition. While only rarely, if ever, depicted in Levantine sculpture, navels are consistently shown in Egyptian sculpture. When considered together with the high quality of sculpting, the type of pleated garment worn by the figure, and the choice of stone, it becomes clear that the fragment comes from an Egyptian work of art. Further, this identification allowed us to interpret the fragment as having come from a three-dimensional statue rather than a high-relief stele, as had previously been suggested (Reed & Winnett, 1963, p. 5). Thus our use of RTI in examining this piece aided not only in reassigning the fragment to a new cultural context, but also in learning more about the type of monument whence it originally came.

Figure 4. The proper right side of the Sheshonq I / Abibaal statue (KAI 5) with specular image enhancement. Vorderasiatisches Museum, Berlin (VA 3361). (Image by Heather Dana Davis Parker)

Figure 3. The Kerak (Kemoshyat) fragment (KAI 306) with specular image enhancement. Kerak Museum, Kerak, Jordan (6807). (Image by Heather Dana Davis Parker)

It is noteworthy that this object is held in a small, regional museum that can be difficult for scholars to visit. Documenting it using RTI has also made this object and the detailed data it contains accessible to a wider audience. (Parker is partnering with the West Semitic Research Project to make these images available online on InscriptiFact [online: http://inscriptifact.com].)

The Statue of Sheshonq I, Re-inscribed by Abibaal

The RTI documentation of another statue fragment currently in storage in the collection of the Vorderasiatisches Museum in Berlin has provided access to it and enabled its further study. A granite fragment inscribed for Sheshonq I, an Egyptian king who ruled from 945 to 924 B.C.E., was discovered at the end of the 19th century (Donner & Röllig, 1952–63, no. 5; Gibson, 1975–82, I, no. 7; Porter & Moss, 1995, p. 388). It was published soon thereafter by Charles Clermont-Ganneau, but his analysis was based not on first-hand examination but rather on squeezes and photographs of the statue provided to him by the then owner (Clermont-Ganneau, 1903; 1905). Subsequent studies of the fragment have been based on his early publication, which includes an image of a squeeze and a single three-quarter-view photograph of the piece itself, as it seems that the piece was misplaced soon after Clermont-Ganneau's analysis. Indeed the statue's current location in Berlin was not noted in print until 2006 (Lemaire, 2006),

Figure 5 [Left]. The front of the Sheshonq I / Abibaal statue with specular image enhancement. Vorderasiatisches Museum, Berlin. (Image by Heather Dana Davis Parker); Figure 6. The back of the Sheshonq I / Abibaal statue with specular image enhancement. Vorderasiatisches Museum, Berlin. (Image by Heather Dana Davis Parker)

information that continued to go unnoticed within the field of Egyptology for some time (e.g., Ritner, 2009, pp. 219–20; Brandl, 2012, p. 90). The Vorderasiatisches Museum has not regularly exhibited the piece and due to current renovations of the museum, according to the curatorial staff, it will not be readily accessible before 2025.

Though this piece is often cited, it has been poorly documented and incompletely examined. From the outset the lack of both on-site examination and high-quality digital images of the piece from which to work have presented problems for its interpretation. For instance, Clermont-Ganneau originally identified it as part of a stele or offering table, an error that was eventually corrected by Dussaud, who recognized that it was in fact the lower part of a statue's seat (Clermont-Ganneau, 1905, p. 74; Dussaud, 1924, pp. 145–47; fig. 5). Previous study of the fragment has been based solely on reconstructions of the object in line drawing and three-quarter-view photographs that do not fully capture the inscribed data on the back of the statue. In fact, an inscription located on a third, previously unpublished face of the statue has been missed altogether.

In 2011, Parker examined the statue fragment and produced RTI images of it. Her interest in the piece lay in the largest preserved face (Fig. 4), which contains not only the cartouches that make up the titulary of Sheshonq I, but also a secondary inscription in Phoenician that was added by Abibaal, a king of Byblos in the 10th century B.C.E, who appropriated the statue for his own use. During her examination, it became clear that previously published images of the statue did not accurately represent all of the characters present on it and that the front of it was also inscribed (Fig. 5).

Parker and Arico again partnered to analyze this piece, and Arico, though unable to examine it first hand, has worked with Parker's RTI images (Arico & Parker, 2013). The ability

Figure 7 [Top]. Obverse of Khirbet Summeily Bulla #301. (Image by Nathaniel E. Greene)

to digitally manipulate the light source when viewing these images has allowed substantial, new information to be gathered from the object, especially where portions of its inscriptions are damaged and identification of individual characters would be more difficult using only static images. One important observation that emerged from restudy of the piece is that the previous line drawings and reconstructions of the inscriptions on the back of the statue (Fig. 6) are incorrect (e.g., Montet, 1926, pl. VI). The production of any kind of photograph of a cultural heritage object and its dissemination among scholars, particularly of different fields, is always beneficial to the advancement of scholarship. This is particularly true for a piece such as the Sheshonq/Abibaal statue that might be inaccessible for the next decade.

Khirbet Summeily Bullae

The bullae from Khirbet Summeily (Hardin, Rollston, & Blakely, 2014) provide a further example of the effective use of RTI not only in providing access to cultural heritage objects but also in preserving them. These bullae (clay seals used on ancient documents) were discovered during the 2014 season of excavation at Khirbet Summeily, Israel, by the Tel el Hesi Regional Project. Due to their state of deterioration, questions arose regarding whether or not the impressions on the obverse of one of the bullae (#301) were epigraphic in nature (Fig. 7) and also about seal manufacture and use. In order to address these questions, Nathaniel Greene, a Northwest Semitic philologist and epigrapher, produced RTI images of the bullae at the University of Wisconsin-Madison in September of 2014. These images allowed the site epigrapher Christopher Rollston to conclude definitively that the bulla in question is, in fact, anepigraphic in nature, a conclusion that was difficult to reach based solely on personal examination of it. In addition to providing a correct interpretation of the obverse of bulla #301, RTI allowed the best possible preservation of all six of the bullae. Following the production of the RTI images and the subsequent epigraphic examination, the bullae were returned to Israel for petrographic analysis by Yuval Goren, Professor of Archaeology at Tel Aviv University. Because petrographic evaluation required that the bullae be, in part, destroyed in

Figure 8. Reverse of Khirbet Summeily Bulla #318, with diffuse gain filter. (Image by Nathaniel E. Greene)

order to obtain samples for chemical analysis, RTI images of the reverse of each of the bullae were produced for posterity, particularly for future research on the production and use of seals/bullae in the ancient world. The use of the diffuse gain filter (Cultural Heritage Imaging, 2014, p. 4) when viewing the RTI image of the reverse of bulla #318 allows one to see the marks on the back of the bulla where, while still wet, this lump of clay was pressed over a string in order to seal the object to which it was affixed (Fig. 8).

Palmyrene Aramaic Inscriptions

Considering the current and prevailing socio-political unrest in the Middle East (ancient Near East), the preservation of cultural heritage has reached a critical state wherein the necessity of high-quality documentation of the material culture of this region is at an all-time high. RTI presents just one way in which the academic and technological/computer science communities can contribute to this endeavor to a degree that these communities have never been able to do before. To offer one example of the dire need for preservation efforts, we point to the ruins of Palmyra in Syria and the way in which the documentation of Palmyrene Aramaic inscriptions is contributing to the preservation of Syrian cultural heritage during an extremely tumultuous time in that nation's history.

Some remains of Roman-era Palmyrene material culture have been damaged significantly as a result of the ongoing Syrian Civil War. According to reports from the field, the Temple of Bel has undergone catastrophic levels of shelling and looting of antiquities has increased. As of the period before the Syrian Civil War, many Palmyrene Aramaic inscriptions remained on the site and in the adjacent museum. In light of the destruction caused by the bellicose activity at Palmyra and also because of the heavy increase in black-market antiquities trade generally associated with the war, these inscriptions, along with other objects from the site, might be in jeopardy. Unfortunately the current status of much of this corpus is unknown.

As a response to this situation, some members of the University of Wisconsin–Madison's Department of Classical and Ancient Near Eastern Studies have embarked on a project imaging the publically-accessible Palmyrene Aramaic inscriptions in the collections of American and other museums. Over the course of the summer of 2013, Greene and Catherine Bonesho completed preliminary documentary work, producing RTI images of approximately 30 Palmyrene Aramaic inscriptions in various museums and collections in New England and the Mid-Atlantic United States. Since then, Greene has documented a handful of other Palmyrene Aramaic epigraphs held in Jerusalem at the W.F. Albright Institute for Archaeological Research with Christopher Rollston and in various institutions throughout the Midwest United States with Jeremy Hutton.

While these particular objects are not in imminent danger from the political unrest in Syria, their value to scholarship and to Syrian cultural heritage has increased dramatically by the threat to the larger Syrian corpus. In response to this threat, Greene and his colleagues have deliberately acted to begin documenting and preserving these items as expediently as possible, doing what they can from afar. Led by Hutton, the Wisconsin Palmyrene Aramaic Inscription Project (WPAIP) is intent on applying RTI technology to as many Palmyrene Aramaic epigraphs as possible. Furthermore, the WPAIP has shared its images with the University of Wisconsin Digital Collections, which provides open access to these images for the broader scholarly community (http://uwdc.library.wisc.edu/collections/ClassicalStudies/WPAIP).

Conclusion

RTI is becoming an ever-more-vital tool for the documentation and study of ancient inscriptions, works of art, and various other material culture remains. In order to achieve the broadest possible application of this technology to cultural heritage objects, it is important that scholars studying such remains partner with professionals who are knowledgeable in the production of RTI images or even receive training to produce such images themselves. Another way to further the use of RTI and to raise awareness regarding the applications of this technology is for scholars utilizing RTI to foster relationships with museums, departments of antiquity, and other collections. One way to do this when approaching an institution to work in its collection is to provide kits that showcase RTI technology and the benefits of photographing inscriptions and other objects in this way. These kits might include documentation such as a cover letter describing the project, the RTI process, the type of equipment to be used, and research goals, as well as requests for permission to photograph and to publish/distribute captured images. Within such kits researchers should make clear the goals of a given photography project and the benefits of such a project not only to the researcher's particular field of study, but also to the institution's collection as a whole. Additionally, given that digital media facilitate a certain amount of expediency in creation of a final product, researchers can provide museums and departments of antiquity with image files immediately upon completion of a photo shoot. In our experience, museum personnel have always been gratified to receive the final

product—especially when those images are handed over to the staff before the researcher even leaves the building. Moreover, working on site in a collection provides opportunities to offer "crash courses" or even seminars in RTI photography to collections staff and patrons. Such cooperation fosters productive, long-term relationships between researchers and curators of antiquities.

RTI is currently one of the best ways to examine an object *in absentia*. When objects are not physically available, images provide access. Furthermore, the utilization of new technologies such as RTI to document antiquities aids not only in facilitating and furthering our current understanding of these pieces, but also has the potential to preserve these objects of value for world cultural heritage and the information they contain for future research. Documentation is preservation.

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The Power of the Future: Re-Analyzing the House of the Rhyta at Pseira

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Abstract

Three-dimensional (3D) modeling has largely been limited to use in archaeological illustrations, rather than as part of the scientific method. This paper discusses one application of 3D modeling as a hypothesis testing tool, using the case study of the House of the Rhyta at Pseira, and suggests additional ways the technology can be useful. The House of the Rhyta is a major cult and domestic structure dating to the Late Minoan (LM) IB period (ca. 1450–1400 B.C.E.). As reconstructed over 20 years ago, however, the structure is not easily inhabitable. It has two terrace levels, with no access between them and no staircases to reach the upper story. This paper demonstrates a 3D state model, which is used to test research hypotheses, specifically to understand of the access between the structure's rooms and floors. These results show the power of 3D modeling to provide new information and enable a fuller understanding of archaeological architecture.

Introduction

While 3D modeling is hardly a new technology in archaeological application (e.g., Biek, 1985; Forte & Siliotti, 1997; Hartmann, Wernecke & Silicon Graphics, 1996; Reilly, 1991), its possibilities have yet to be fully explored (Favro, 2012, p. 276; Frischer, 2008, p. viii; Forte, 2008b, p. 23; Forte & Pietroni, 2009, p. 65; Gill, 2009, p. 317). Frequently 3D models are used as illustrations to text, and often their three dimensional capabilities are sacrificed to create static, two-dimensional images equivalent to artists' renderings (Bentkowska-Kafel, 2012, p. 258; Champion, 2001, pp. 2–3; Frischer, 2008, p. vi; Goodrick & Gillings, 2000, pp. 42–3). While illustration is an important application for 3D modeling, it is only one aspect of the technology's capability; some authors even suggest that a focus on creating images distracts attention from putting models to an even more meaningful use (Forte, 2008a, p. 93; Gillings, 2002, p. 17). Equally important is the potential for 3D modeling to allow for heuristics, or direct experimentation (Favro, 2012, p. 276; Frischer, 2008, p. xiii; Frischer & Fillwalk, 2013, p. 342; Goodrick & Gillings, 2000, p. 52, Johanson, 2009, pp. 406–7; McCarty, 2004, p. 255; Snyder, 2012, pp. 396–97), including but not limited to verification of an archaeologist's interpretation of architecture (Favro, 2012, p. 273; Forte & Siliotti, 1997, pp. 12–3). Using 3D modeling for heuristics is critical because many sites are now lost or inaccessible. Accurate 3D models can allow such sites to be studied without fieldwork that might be prohibitively expensive, impractical due to political roadblocks, or impossible because the site has been destroyed.

One reason that model-based experimentation has not yet seen widespread application on archaeological projects may be that project directors are not fully aware of the current capabilities of 3D modeling. Early enthusiasm for the technology led to great disappointment when initial attempts at models failed to live up to archaeologists' visions of perfect photorealistic virtual reality (Champion, 2011, p. 17; Goodrick & Gillings, 2000, pp. 47–8; Snyder, 2012, p. 418). Due to technological developments and recent advances in the field, however, today we have almost reached the point at which such models can be quickly and easily generated. In fact, the technology already exists but may require greater time and resource commitments than many archaeological projects can spare (Champion, 2011, pp. 17–8; Snyder, 2012, p. 402, 419). Given larger budgets, teams, and time, however, 3D models can be produced that are nearly impossible to distinguish from reality, at least in still image form. Relatively simple applications of 3D modeling, especially photogrammetry (a process in which multiple digital photographs of the same object or site, taken from different angles and/or positions, are cross-referenced to create a model [Koch & Kaehler, 2010, 2–3; Lo Brutto & Meli, 2012; Olson et al., 2013, pp. 247–60; Pollefeys et al., 2000; Santagati, Inzerillo, & Di Paola, 2013; Wulf, Sedlazeck, & Koch, 2012; Yilmaz, Yakar, & Yildiz, 2008, pp. 489–93]), can even now produce photorealistic "state models," 3D models of extant archaeological remains, and require only a laptop, a few hours in the field for photography and measurements, and a day or so of computer processing. Although in this sense the future of the past, as this volume calls it, has now arrived, many archaeologists who do not work actively with the technology still distrust it, while others are simply unaware of its applicability to their own work.

Now that 3D technology has become easier and even more useful, it should take its place as one more tool in the archaeologist's kit. To become widely used, however, it needs to be a) used well and b) publicized. We have already made a good start on using the technology well. Like that of many practices in archaeology, the dissemination of 3D technology is not uniform, depending primarily on the region in which the work is being done. Roman archaeologists, for example, have been at the forefront of 3D modeling, helping to develop many of the more useful applications (e.g., VSim [https://idre.ucla.edu/research/active-research/vsim; Snyder, 2013, 2014], Rome Reborn [Favro, 2006], and even Google Earth's 3D ancient world viewer [Gill, 2009, pp. 321–24]) and creating models for teaching, outreach, and experimentation. Some sterling examples of model-based heuristics in Roman archaeology include RomeLab (http://romelab.etc.ucla.edu/projects/; Johanson, 2009), the Oplontis Project (Clarke, 2014a, 2014b, 2015; Clarke & Muntasser, 2014), the Digital Hadrian's Villa Project (Frischer & Fillwalk, 2012), and the Virtual Solarium Augusti (Frischer, 2014; Frischer & Fillwalk, 2013). In Minoan archaeology 3D modeling is less embedded, and

model-based experimentation is relatively rare. There are, however, some excellent heuristic studies, such as Eleftheria Paliou's work on Akrotiri (Paliou, 2011a, 2011b). From purely anecdotal data, I know of three different excavations on Crete that are currently using 3D modeling: Petras, Mochlos, and Gournia. There are, undoubtedly, others.

The second step to widespread application of 3D modeling, however, is often not met: publicity. So far, only one of the above Minoan projects has published results from its modeling, and even that is purely for illustrative purposes (Betancourt, 2012, p. 108, fig. 1c). Until project directors understand the capabilities and limitations of 3D modeling, they will not know how best to apply it in their own work. Thus, while an excavation's architect may use photogrammetry to produce drawings more quickly, or a particular excavator may document the phases within his trench with photogrammetry, in the end they publish only the results that were produced in part by 3D modeling, rather than the models themselves. Very likely, they will not even mention the use of models in helping them reach the final product (e.g., Betancourt, Tsipopoulou, and Clinton forthcoming). Of course, no archaeologist is required to discuss all the technical details that went into any given publication, especially if the model itself is not the focus of the publication. It is therefore all the more imperative for those who routinely use 3D modeling (and who want to see it widely disseminated) to make an extra effort not just to publicize their results but also to make it clear how they were achieved. In addition, they need to move such articles out of technical publications and into the mainstream, where more traditional archaeologists are likely to read them.

This article is an attempt to foreground not just the results of 3D modeling, but also the means by which they were achieved. I present a preliminary version of a 3D state model of the House of the Rhyta on Pseira (Fig. 1). It is not a perfect video-game image, because absolute photorealism is not necessary for my purposes. Similarly, the model is not reconstructed, although in the future higher quality photorealistic models and a complete reconstruction or visualization could be produced. I use this model to form a new hypothesis about the use of a Minoan building on Pseira, the House of the Rhyta or Building AF North. This preliminary work should be seen as a case study in potential applications of 3D modeling beyond illustration.

Methods

In the summer of 2014, I undertook an intensive architectural re-examination of Block AF at the Minoan site of Pseira in eastern Crete. The work included new measurement, drawing, and photography with the goal of reinterpreting the existing remains using both traditional and digital methodologies. Measurement was accomplished with a Topcon Hiper Lite Green Label Differential GPS (DGPS), with the resulting measurements imported into ESRI ArcMap for analysis. The structure was photographed at high resolution using the 36.3 mp Nikon D800. Over 7,000 photos were taken, and 840 representative images were imported into Agisoft PhotoScan Professional Edition for photogrammetric modeling, although for later publications a more detailed model that includes a greater number of photographs will be created. In addition

Figure 1. 3D state model of the House of the Rhyta (Building AF North) on Pseira (Model by M.G. Clinton)

to the measurements for making a new traditional plan of the House of the Rhyta, targets designed for recognition by the Photoscan software (visible in Figs. 1, 5, 7, 8) were also measured using the DGPS. These measurements allowed the model to be geographically referenced so that it is both spatially situated and accurately scaled.

The project produced a detailed 3D state model (Fig. 1), which in combination with architectural observation provides an understanding of the access between the rooms. Most important, I propose a new location for the stairs to reach the cult areas in the upper story. These results provide crucial new information to enable a fuller understanding of the Minoan use of the building as both a domestic and a cult structure. The body of documentation generated will additionally allow for more intensive work in the future, including a full 3D reconstruction of the House of the Rhyta.

I use this model in one particular way for this study, but, in documenting the structure and creating the model, I strove to work without bias. The entire structure was measured, photographed, and drawn, not just the potential staircases or the LM IB walls. My objective was to demonstrate that the body of data, particularly the 3D state model, can be used in different ways for secondary research (Snyder, 2012, pp. 416–17; 2013, pp. 7–8). One advantage of creating a 3D model through photogrammetry is that it allows the creation of new research questions after fieldwork has been completed. In other words, other scholars will be able to use the same models for their own experimentation. While archaeologists try to take every possible datum in the field, it is impossible

to anticipate all the research questions that an excavation will generate. With a relatively inaccessible site like Pseira, it may not always be possible to return to the field in a timely manner to answer those questions, and so scholars may in the end use measurements or photographs that only come close to answering their precise questions. 3D modeling the structure allows new measurements and analyses to happen at any time after the field season and can be used to generate any necessary images from any possible angle. For example, many of the figures in this article were produced from the 3D model (Figs. 1, 5, 7, 8).

To highlight how the 3D model allows new measurements to be taken, I measure the elevation of various visible stones using a Digital Elevation Model (DEM) and compare to original measurements in the field to verify their accuracy (Table 1). It would also be possible to measure directly from the model in AutoCAD or 3dsMax. The DEM elevations are extremely consistent with the DGPS measurements. Both, however, differ significantly (by approximately 0.55 m) from the excavation measurements. The reason for the discrepancy lies in human, not computer, error. I measured from an original datum point from the excavation and allowed the DGPS to auto position its coordinates in the Greek national grid. The datum measurements used by the excavators were no longer available when the new study was performed; for this reason, the coordinates differ. The difference, however, is consistent insofar as it is possible to match the points taken in 1990 and 1991 with stones still visible in situ. This consistency shows that, despite the difference in raw measurements, the DEM is giving precise and likely accurate data. In the discussion below, I rely on differences in elevation between different walls and floors to negate the problem of adjusting between the 1990–1991 and 2014 measurements (Table 2). In each case, I refer to the measurements as given by the DEM, although whenever possible they were also checked against the original excavation measurements.

The House of the Rhyta

The House of the Rhyta, or Building AF North, is found on Pseira, a small island just over 3 km from the northeastern coast of Crete. The settlement there was an important Minoan seaport in the Gulf of Mirabello. The island was occupied, though not continuously, from the Neolithic period until the Byzantine era (Betancourt, 2009, p. 3). The Minoan town of Pseira sat on the Katsouni peninsula on the southeastern coast of the island, facing Crete. Remains of about 60 structures have been excavated in this town; they were arranged in irregular blocks divided by roadways (Betancourt, 2009, p. 3). Block AF (Fig. 2), at the southern tip of the peninsula, was excavated in 1990–91 by a team from Temple University under the direction of Philip P. Betancourt and Costis Davaras (Betancourt, 2009, pp. xix–xx); there have been several publications detailing the excavation of the House of the Rhyta (Betancourt, 2001, 2009; Betancourt, Banou & Floyd, 1997; Betancourt & Davaras, 1993; Dierckx, 1995; Floyd, 1995, 1997; Floyd et al., 1995; Pariente, 1992). Although the land occupied by Block AF is level, it slopes down quickly to the east toward cliffs that drop to the sea, and so some portions of the structure have been lost in this area (Betancourt, 2009, p. 33). While the slopes at the west and south

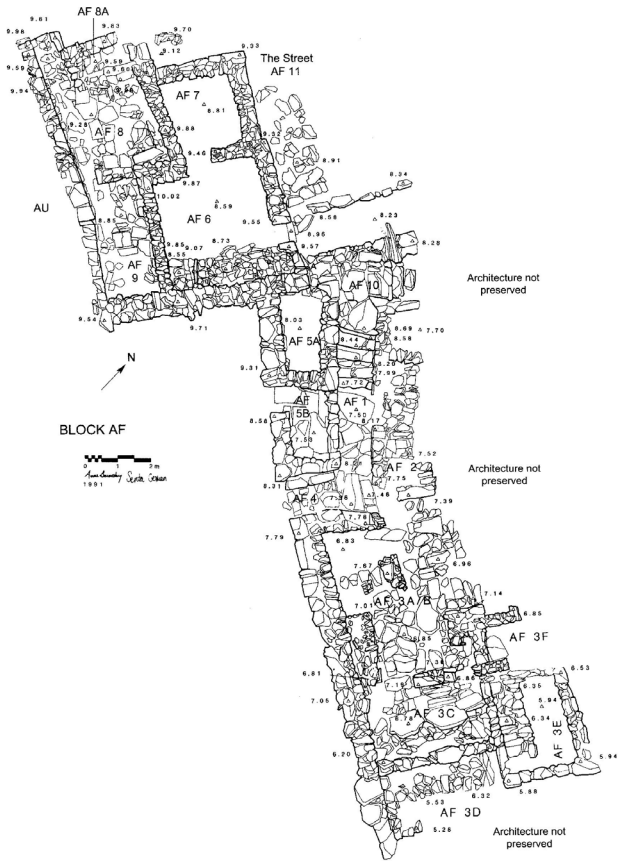

Figure 2. State plan after original Block AF excavation (After Betancourt 2009, 7, ill. 2.1; 15, ill. 2.5)

Table 1. Comparison of elevation measurements from House of the Rhyta state plan (Betancourt 2009, 14, ill. 2.5), DGPS, and DEM created from the 3D state model. All elevations are in meters above sea level.

Location	State Plan	Location Notes	DGPS	Location Notes	DEM	Location Notes
NE corner AF 7	9.33	center of block	9.82	average of N and E sides of corner	9.8	center of block
SW corner AF 5B	8.31	center of block	8.78	corner of block	8.78	corner of block
NE corner AF 5A	9.57	W corner of block	10.13	center of W side of block	10.14	W corner of block
Bench in N wall of AF 8	9.6	center of W side of stone	10.2	NW corner of stone	10.17	center of W side of stone

are more gradual, it is clear from the architectural remains that the land to the south has fallen and that the structure extended further south than is currently preserved (Betancourt, 2009, p. 5, 8).

Block AF is one of the most important groups of buildings from Pseira due to its long occupation and its complex interweaving of cult and domestic activity (Betancourt, 2009, p. xvii). The block preserves the longest stratigraphic sequence from the site, from at least Middle Minoan (MM) I or II to LM IIIA, or roughly 1800–1350 B.C.E., and includes two overlapping structures: AF South, the earlier building, and AF North, the later one. Only two rooms, AF 5A and 5B, were used in both phases (Betancourt, 2009, pp. 3–4).

The House of the Rhyta (AF North), the LM IB (ca. 1500–1450 B.C.E.) building, was a major cult building in addition to a domestic structure (Betancourt, 2009, p. 170). The building is unusual in that it is smaller and less elaborate than the typical buildings that so fully integrate domestic and ritual functions (Betancourt 2009, xvii), such as the so-called "palaces," "villas" like Nirou Chani (Fotou, 1997; Xanthoudides, 1919, 1922), and other special or structures like Pseira Building BS/BV (Floyd, 1998) or Thera Xeste 3 (Palyvou, 2005, pp. 54–62). This combination of domestic and ritual functions marks the House of the Rhyta as a particularly important building in Minoan Pseira, which had only two other structures that seemed to have any ritual purpose, the "Shrine" (Building AC) (Betancourt & Davaras, 1998, pp. 1–77) and Building BS/BV. Therefore, an understanding of this complex structure can yield important insights into the life of the town as a whole at the end of the Neopalatial period and illuminate a rarely studied type of architecture.

The House of the Rhyta (Figs. 1, 4) consisted of six rooms in three zones: the upper terrace, the lower terrace, and the south rooms. The upper terrace, including AF 8 and 9, was at the northwest. It was entered through a doorway in the north wall of AF 8, but the doorway is no longer preserved (Betancourt 2009, 161). AF 8, the northernmost room, was at a higher elevation than AF 9 by approximately 40 cm (Table 2), and separated from it by a mud brick wall (Betancourt, 2009, p. 161). The second zone of the building, the lower terrace, included AF 6 and 7. It lay at the northeastern corner of the building. The original LM IB floor was not fully preserved due to later reuse (Betancourt, 2009, p. 167). The floor of AF 6 was approximately 30 to 40 cm lower than that of AF 9, its counterpart to the west, and AF 7 was also lower than AF 8 (Table 2). The lower terrace was entered through a well-preserved doorway at the southern corner of the eastern wall, opening onto AF 6. A stone wall with a doorway at the north of AF 6 led to AF 7, which had no other access point. The third zone that formed part of the House of the Rhyta consisted of the southern rooms, AF 5A and 5B. These two rooms were the only portion of the earlier building AF South that were reused after the earthquake destruction at the end of LM IA (ca. 1500 B.C.E.) (Betancourt, 2009, p. 3). They were substantially lower than the rooms of AF North. AF 5A was a small doorless space, while AF 5B's only door led to the exterior, at the west. Finally, an upper story also existed, based on the collapsed remains fallen into AF 5A, 5B, 6, 8, and 9 (Betancourt 2009, 160; 168–69). No architecture from the upper story survives intact.

The House of the Rhyta was damaged by fire at the end of LM IB and was only partially reoccupied in LM IB–Final (ca. 1450–1400 B.C.E.) and LM IIIA (ca. 1400–1350 B.C.E.) (Betancourt, 2009, p. 3, 18). The ground floor rooms were partially cleaned and reused, even though parts of the northern wall had collapsed and were roughly buttressed (Betancourt, 2009,p. 161). A new entrance into AF 8 was constructed, due to the instability of the northern wall. The upper story was not in use at this time.

Goals of the Pseira Modeling Project

The finds show that the House of the Rhyta was a unified structure in the LM IB period (Betancourt, 2009, p. 166). Like many Minoan structures, including those on Pseira and Thera, it included an elaborate upper story and less elaborate ground floor (Palyvou, 2005, p. 51). The upper story is particularly important in that it served as the cult space, while the ground floor was used domestically and as a service area. AF 5A and 5B did not have many finds, except for a few lamps (Betancourt, 2009, pp. 61–3). Throughout AF 6, 7, 8, and 9, the usual domestic assemblage of pottery was found, including storage, food preparation, and serving pottery, and all four rooms contained clay weights, indicating weaving (Betancourt, 2009, pp. 166–68). The cult space clearly spread over AF 5A, 5B, 6, 8, and 9, although the collapse of the room (if any) above AF 7 yielded few finds, none of them obviously ritual (Betancourt, 2009, pp. 73–7). The ritual finds include pithoi with Linear A inscriptions, rhyta, bull-shaped vessels, pottery in the Knossian Special Palatial Tradition, a marble chalice, a triton shell, and wall plaster (Betancourt, 2009, pp. 168–70). During the Pseira Modeling Project, a new leg fragment from a bull rhyton or figurine was also found under a fallen stone in AF 6 (Fig. 3; perhaps part of AF 208 [Betancourt, 2009, p. 72, fig. 14]).

While the functions of each room, and especially of the collapsed upper story, make it clear that the House of the Rhyta was unified, the architecture presents a completely different picture. There are the three zones discussed above, with no obvious access between them. Just as mysteriously, no staircase

Figure 3. Leg fragment of bull rhyton or figurine found under fallen stone in AF 6 (Photographs by Ch. Papanikolopoulos)

Table 2. Differences in elevation between floors of the House of the Rhyta as measured from the state plan (Betancourt, 2009, p. 14, ill. 2.5) and DEM created from the 3D state model. All elevations are in meters above sea level.

Location (Elev. 1, Elev. 2)	State Plan Elev. 1	State Plan Elev. 2	State Plan Difference in Elev.	Location Notes	DEM Elev. 1	DEM Elev. 2	DEM Difference in Elev.	Location Notes
LM IB paving stones (AF 8, AF 9)	9.28	8.85	0.43	center of each floor	9.83	9.46	0.37	center of each floor
LM IB paving stones (AF 8, AF 9)	N/A	N/A	N/A	N/A	9.65	9.52	0.13	step between AF 8 and 9
LM IB paving stones (AF 8, AF 9)	N/A	N/A	N/A	N/A	9.91	9.5	0.41	highest point of AF 8 and lowest point of AF 9
LM IB floor deposits (AF 9, AF 6)	8.9	8.48	0.42	stratigraphic records for highest LM IB floors	9.46	9.18	0.28	opposite sides of party wall between Rooms 9 and 6, at S end
LM IB floor deposits (AF 9, AF 6)	N/A	N/A	N/A	N/A	9.47	9.22	0.25	center of S wall of AF 9, center of "hearth" in S side of AF 6
LM IB floor deposits (AF 9, AF 6)	N/A	N/A	N/A	N/A	9.61	9.2	0.41	foundation stone of W wall of AF 9, bottom of threshold at entrance to AF 6
LM IB floors (paving stone of AF 8, floor of AF 7)	9.28	8.81	0.47	center of each floor	9.83	9.36	0.47	center of each floor
LM IB floors (paving stone of AF 9, floor of AF 5A)	8.85	8.03	0.82	center of each floor	9.46	8.64	0.82	center of each floor, ignoring fallen stone in AF 5A
LM IB paving stones (AF 9, AF 5B)	8.85	7.53	1.32	center of each floor	9.46	8.13	1.33	center of each floor

or other access point to the elaborate upper story has been found. My goal, therefore, was to re-study the architecture of Block AF in order to suggest a reconstruction that reconciles the architecture and the finds of the House of the Rhyta while simultaneously showing the power of 3D modeling.

The Case for the Staircases

There must have been one or more staircases in the House of the Rhyta. Even though it is not impossible for a Minoan structure to be built without staircases (e.g., the Chalinomouri Farmhouse [Soles, 2003, pp. 103–32]), it is more usual to find one or even more staircases. For example, all but one of the fully excavated structures at Akrotiri have staircases (Palyvou, 2005, pp. 46–99). John McEnroe, the architect for the Pseira project, points out that the 26 preserved staircases at Pseira must represent only a fraction of the total (McEnroe, 2001, p. 42), and there are Pseiran examples of structures with multiple staircases (e.g., AD Center [Betancourt & Davaras, 1995, fig. 30]). Staircases are essential when a house spans multiple terrace levels, as the House of the Rhyta did (McEnroe, 2001, p. 39). The clear unity shown by the finds fallen from the upper story means that the three ground floor zones formed part of a single structure, rather than being separate domestic units sharing party walls. Since no other access between the zones exists, they must have been co-accessible from the upper floor.

The most important factor demanding a staircase in the House of the Rhyta, however, is the presence of the elaborate cult facility on the upper floor. Ladders, the only other possible means of reaching the upper floor, were unlikely to be an

acceptable option for ritual use. It is possible they would not have sufficed even for mere storage of important ritual objects, when one considers the possibility of dropping and breaking items when navigating a ladder (a possibility attested by the attention to supplying light to staircases on Thera [Palyvou, 2005, p. 135]). The grandeur of a ritual procession, if one occurred, would certainly have been lessened by the use of ladders. Since the inhabitants of the House of the Rhyta went to the effort of plastering and painting the upper story and obviously expected it to be a formal space, they most likely preferred a formal access route, including a staircase, to reach it. I know of no examples of ritual spaces on upper floors that were reached solely by ladders and few examples of multi-story Minoan structures without at least one staircase; Clairy Palyvou considers them imperative (Palyvou, 2005, p. 135).

I suggest that there was not just a single staircase in the House of the Rhyta, but in fact there were three access points between the ground floor and the upper story, one in each zone of the structure (Fig. 4). Specifically, there may have been staircases in AF 6/9 and 7/8, while AF 5A, as a typical doorless storage room, was most likely accessed only via a ladder (Betancourt 2009, 18). AF 5B's relationship to the rest of the structure is unclear. It may have been accessed by a ladder like AF 5A, or its ground floor may have been a more public space entered only from the exterior with no access to the upper floor (Betancourt, 2009, p. 18). In addition to the staircases accessing the upper story, I suggest that the staircase in AF 6/9 also provided access between the upper and lower terraces.

This new theory could not have been created without use of the model. Although aspects of it were suggested by Philip P. Betancourt in the initial publication (Betancourt, 2009, p. 161, pp. 167–68), it could not have been confirmed without either extensive fieldwork on Pseira, a relatively inaccessible island, or a detailed state model. By their nature architectural plans make structures look far more confusing than the model is to the untrained human eye, and in this particular case the unity of the structure never becomes clear in the state plans (Fig. 2). In fact, it is easiest to understand the architecture when plans, sections, and models supplement each other. Most important, the model allowed me to study potential staircase locations in greater detail than would have been possible in one week of fieldwork, unless I had come prepared to answer only that single research question.

Figure 4. Block plan of the House of the Rhyta with suggested reconstructions of the entrance to AF 8 and the staircases (Map by M.G. Clinton)

Figure 5. North wall of AF 8 from north showing L-shaped bench at left (Model by M.G. Clinton)

The Staircase in AF 8

The most likely location for the staircase in AF 8 is not difficult to identify. It must have been on the eastern side of the room. It was a U-shaped staircase, with the second flight rising above the western half of AF 7 (Fig. 4). In fact, it is not obvious today only because it was probably mostly of wood and because the collapse and subsequent buttressing of the northern wall in the LM IB Final period scattered stones all over the floor of AF 8.

Unfortunately, even the doorway to AF 8 is hard to identify today. It most likely opened into the north wall 1.36 m west of the wall dividing AF 7 and 8, as measured from the 3D model. This location seems most likely because of the L-shaped bench immediately to the east of this location and protruding to its north (Fig. 5). Vestibules are a ubiquitous feature on Pseira, with 16 examples preserved (McEnroe 2001, 52). Many of them were marked by L-shaped benches, including at least two others (AC 10 and AM 1) that protruded at right angles from an exterior wall (McEnroe 2001, 53). They are almost uniformly located near the entrance of their associated structure (McEnroe 2001, 53). In this case, independent confirmation of the original function of the area was found during the new architectural study. Cleaning of the area revealed that the paving slab immediately in front of the bench was an installation for pressing or grinding (Fig. 6). A channel and several depressions were found below stones fallen from

Figure 6. Pavement stone with installation north of the bench in north wall of AF 8 (Photograph by M.G. Clinton)

Figure 7. Suggested landing at the bottom of proposed staircase in AF 8 (southeast corner of AF 8) from north (Model by M.G. Clinton)

the LM IB–Final buttress, indicating that something performed on the slab involved liquid. At Akrotiri, it is not uncommon to find installations to manage water and/or perform work, especially mill work, in or near structures' entrance lobbies (Palyvou, 2005, p. 106). The combination of the bench and the pavement installation makes it extremely likely that the door was nearby, rather than in the location used by the LM IB–Final inhabitants (the northwest corner of AF 8). In other words, it seems most reasonable to place the doorway at or near the end of the preserved LM IB wall at the northern end of AF 8—approximately 1.36 m west of the eastern wall of the room.

If the doorway was in this location, it would have lain approximately 1 m east of the postulated staircase. The presence of such a doorway makes it tempting to suggest that the staircase ascended from the north toward the south (away from the doorway) before turning back to end at the northwest corner of AF 7. This interpretation is certainly possible, and it would match the vestibule of the typical Theran house, as identified by Palyvou (Palyvou, 2005, p. 54). It would also create a somewhat bent axis, which was common in Minoan architecture, especially in spaces associated with ritual use (Betancourt, 2007, p. 82; Letesson, 2009, p. 358n; Marinatos & Hägg, 1986, p. 72; Preziosi & Hitchcock, 1999, p. 77).

In this case, however, I suggest that the staircase was reversed, ascending from the south to the north (toward the doorway), turning, and terminating in a landing that opened into the room almost directly above AF 6 (Fig. 4). Note that this arrangement, too, creates a bent axis, one that is more similar to the spiral pattern found in many cult buildings (Betancourt, 2007, p. 81; Letesson, 2009, p. 358; Preziosi. 1983, pp. 159–60). I have two reasons for this unorthodox suggestion. The first is related to finds: no cult objects were found fallen into AF 7, unlike every other room in the House of the Rhyta (Betancourt, 2009, pp. 73–7). If the staircase had opened into the room above AF 7's northwest corner, every ritual participant would have needed to traverse the entire room. In fact, that large space would have been part of the ritual observance, perhaps even a viewing area for participants with limited access to the full ritual (Nordfeldt, 1987, p. 193). While people were watching the ritual, or even simply moving through the room, it seems likely that some objects would have been left there. If, on the other hand, the upper story above AF 7 was not a complete room, but merely a landing for a staircase, it would explain the lack of objects. My second reason for suggesting that the staircase begins at the southeast corner of AF 8 is the L-shaped construction in the southeast corner of the room (Fig. 7). Although it was originally identified as a platform, it would be highly unusual to find a platform in a sotto scala. It is more likely that the construction formed part of the landing at the bottom of the staircase, since it was common to increase storage space under a staircase by raising the landing (Palyvou, 2005, p. 135). Thus, what now appears to be a platform in the southeast corner of AF 8 was most likely part of the landing at the bottom of the House of the Rhyta's main staircase.

Regardless of which direction the staircase rose, it must have been located along the eastern wall of AF 8. This location is the most consistent with the typical Minoan entrance pattern of door and main staircase, as seen on Thera, and it is the only space that would not impede circulation through AF 8 and 9 or prevent them from being used for other purposes. Room 9 could not have been filled with a U-shaped staircase, since the finds show that it was also used for industrial and domestic activities (Betancourt, 2009, p. 85). It could, however, have included a single flight of a staircase. This would explain the relatively small number of finds (Betancourt, 2009, pp. 85–6).

The Staircase in AF 6

I suggest that a second staircase existed in the lower terrace, rising from the east to the west (away from the door) along the south wall of AF 6 (Fig. 4). It must have been an L-shaped staircase, turning towards the north to continue its second flight above AF 9.

The presence of a staircase in AF 6 is more controversial than the one in AF 8. A single staircase would have satisfied the need for formal access to the upper story. Some might argue that a ladder would be sufficient to reach the upper story from

Figure 8. Remains of suggested LM IB staircase (LM IB-Final hearth and platform) in AF 6 (south end of AF 6) from north (Model by M.G. Clinton)

the service area. While a ladder would be a possible access, the architectural configuration of the room makes it unlikely. AF 6 is quite large, and its walls were load bearing. The walls would have been under considerable strain to support the room above, especially with no central pillar or column, as commonly seen in large rooms (Palyvou, 2005, p. 130). Leaning a ladder against one of them could have been risky, especially against the most obvious choice, the northwest corner of the room, which was a pivotal support for all three northern rooms of the upper story. An east-west oriented staircase, however, could have fit between the support beams of the ceiling without weakening the structure. It could also have made use of the larger exterior south wall for support. For this reason, a staircase could most easily have been located in the southern portion of AF 6.

The model shows that there are the remains of some unidentifiable construction in the south part of AF 6 (Fig. 8). In the LM IB–Final period, after the initial destruction, it was used as a hearth (Betancourt 2009, 167). John McEnroe identifies the construction as a platform (Betancourt, 2009, p. 36), and it may have been used as such in the final occupation phase. It was not originally a hearth, however. Hearths ideally consist of vertical stones that reflect heat inward, but the stones of this construction are almost all horizontal (with the exception of a single stone that has been placed upright) (Fig. 8) and additionally seem jumbled, as though they were not placed deliberately. I suggest that these stones represent the remains of a staircase from the original House of the Rhyta, which was reused as a hearth and platform in the final reoccupation.

The staircase, of course, could not have been U-shaped, for the same reasons that a ladder was impractical. It also could not have risen northward over the western half of AF 6, because the support beams lay east-west. It must rather have continued to rise over AF 9, ascending to the north to end near the northeast corner of that room. In addition, a short staircase may have connected AF 9 with the landing of the stairs rising from AF 6, making a U-shaped staircase in AF 9. AF 9's width is perfect for such a use, and there is precedent from the West House and other structures at Thera for multiple terrace levels accessing the same staircase (Palyvou, 2005, p. 49). Thus, the staircase in AF 6 could also provide access between the upper and lower terraces.

In case of AF 6, study of the 3D model allowed me to eliminate impossible theories. Originally, it was suggested that there was no full staircase from AF 6 to the upper story (Betancourt, personal communication). Instead, the theory was that there was a short flight of stairs that simply joined the lower terrace to the upper by rising towards the west from AF 6 to AF 9. The original excavators could neither confirm nor eliminate this theory, but the model and excavation records together show that the difference in elevation between the two rooms' floors was between 30 and 40 cm (Table 2). Therefore, a full flight of stairs would not have been needed, since the average rise of a Minoan stair is approximately 20 cm (Clinton, 2011). Two steps could have sufficed, and a door between the rooms would have been necessary were they directly connected. No such door exists. Thus, both the model and the excavation records indicate that if any staircase existed, it must have been designed to rise to the upper floor. I suggest that it did, and it also joined AF 6 to AF 9.

The House of the Rhyta in LM IB

Despite its architectural peculiarity, the House of the Rhyta (Figs. 1, 4) is a typical Minoan structure, albeit a special one more comparable to elaborate structures like Nirou Chani or Xeste 3 than a standard house. It is a bit larger than the typical domestic structure, but it is on the small end of the elaborate structures that combine cult and domestic use. It adapts to the topography around it, resulting in multiple terrace levels on the ground floor and a unified upper floor. It had two staircases, one formal (AF 7/8) and one a service stair (AF 6/9). The most difficult interpretive aspect of this structure was the lack of access between the terrace levels, a problem resolved with the use of 3D modeling technology. The House of the Rhyta is an important but no longer mysterious structure.

Conclusions and Future Work

This detailed study of the architecture of the House of the Rhyta is only the first step in understanding how people actually used the complicated structures of the Minoan world. Even for those who specialize in ancient architecture, it can be nearly impossible from the ruins that remain to visualize how people actually lived in their own homes. The use of 3D modeling in combination with accurate measurements and drawings, as in the Pseira Modeling Project, allows the same building to be restudied in a multitude of ways without new fieldwork. For example, as a next step I plan to create a 3D reconstruction within an online gaming environment as an interactive behavior study (e.g., Forte, 2008a, pp. 93–5). From this game, data will be gathered on the circulation patterns used by the people exploring the House of the Rhyta. This planned research is just one possible use of the 3D data gathered during the Pseira Modeling Project. Pseira is an island with no inhabitants or facilities to house a research team. Thus, to study the structures, one must charter a boat. Through 3D modeling, however, I was able to document the entire structure so that its architecture can in future be studied from the comfort of our homes. Thus, the questions that we do not know to ask today can be answered in the future.

In addition to opportunities for heuristics, 3D modeling Pseira will bring a host of additional advantages. The existing plans of the site can be corrected. Conservation projects can be planned with great precision. For example, INSTAP already used data from the project as an opportunity to carry out conservation on the House of the Rhyta. That conservation led to new discoveries, including the bull leg and the installation in the pavement (Figs. 3, 6). Perhaps most important, a 3D model may someday allow anyone to visit Pseira and appreciate the genius of the Minoans, at least in the virtual world. Even better, such a virtual visit might inspire them to make the physical journey or to support archaeology in other ways. Estimates show that 20 to 30 million people regularly participated in virtual worlds in 2006 (Messinger, Stroulia & Lyons, 2008, p. 2). This large community of people interested in experiencing different worlds online is a vast, almost untapped resource in archaeology. We should move to take advantage of it through online virtual reality content in three dimensions. The more people who understand the importance of archaeological remains, the less likely they are to be carelessly destroyed and lost to future generations.

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Visualizing Structural Issues Through Photogrammetric 3D Documentation of Cultural Heritage: the Venetian Sea-Fortress at Herakleion, Crete, Greece

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Abstract

Archaeological sites, monuments, and associated works of art are frequently fragile and sometimes evanescent. A three-dimensional (3D) digital model of a historic monument in its current state ensures that even if the physical structure disappears or changes, a digital copy will remain for future observation and analysis. Beyond the important documentation aspects of 3D digital models, scanned datasets also have an obvious visual appeal that engages audiences. By scanning an object or a site, the digital version can be easily revisited, visualized from any angle or direction, and shared with others. It can be edited and reused for virtual reality reconstructions and simulations. It can even be printed using a 3D printer at the desired scale and with the desired material. A priceless source of information for researchers is the point-cloud and the possibility it gives to extractprecise measurements at any time, such as point-to-point distances, cross-sections, volume, perimeter, and surface area calculations.

The case study presented in this paper to demonstrate the above points consists of the 3D digital documentation of the formidable fortress on the western pier of Herakleion (Crete, Greece) harbor. Its current name, *Koules*, is derived from the Turkish name *Su kulesi* (although it was built under Venetian occupation). The fort is in the shape of an irregular rectangle, the structure of which, digitally recorded on the exterior facade, consists of strong walls from 7 to almost 9 meters thick.

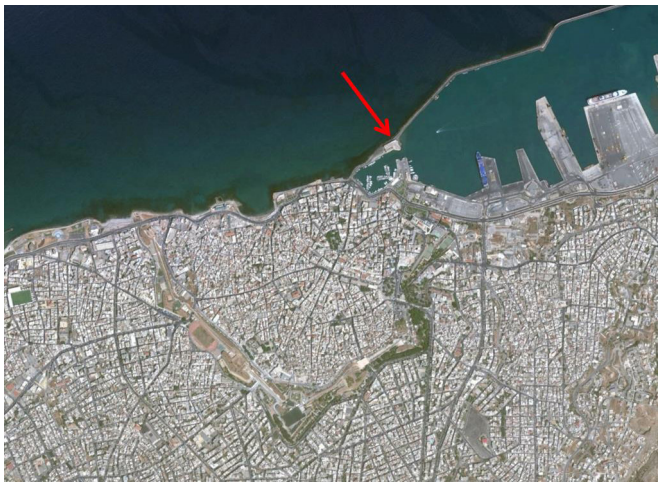

Figure 1: The city of Herakleion (Crete, Greece) and the Venetian Castle (red arrow) inside the modern harbor.

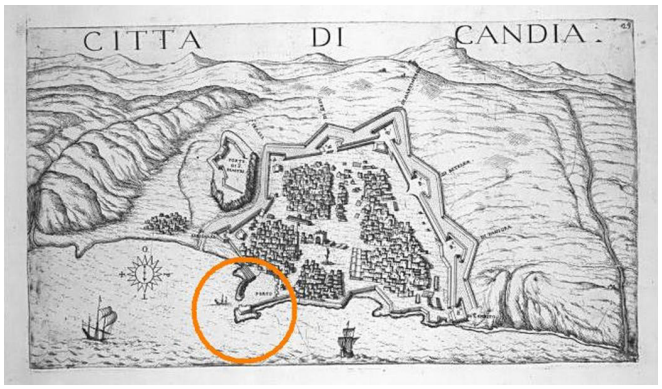

Figure 2: Artistic representation of Herakleion (former "Citta' di Candia" or "City of Candia") by Boschini (Boschini, 1651, p. 41).

Introduction: The Venetian Fortress

The focus of this paper is the photogrammetric documentation of a monumental building situated along the northern coast of Crete, in Herakleion, the modern capital of the largest Greek island. The building, a Venetian fortress (*Fortezza* or *Rocca al Mare*, according to the Venetian name) which was part of a larger strategic port structure (Fig. 1), is actually one of the main symbols of the municipality of Herakleion (Spanakis, 1964, pp. 226–27; Tzompanaki, 1996, pp. 282–88, 463–71).

In a perspective representation of the Venetian Candia (modern Herakleion) from 1651 (Fig. 2), the port (circled in orange), facing the northern coast of Crete, is much smaller than the modern one. The fortress was part of the fortification of the city and controlled the entrance to its main commercial harbor.

According to Xanthoudides, ancient Herakleion was first created as Knossos' seaport, thus the first constructions in the area should have taken place during the Bronze Age (Xanthoudides, 1964, p. 43). He proposes that the large stone-block foundations and the ground of the two breakwaters of the port belong to construction during those early periods. Some Proto-geometric pottery was found in the wider area around the port during excavation that took place at the basilica of St. Peter at Bedenaki and the ancient writer Strabo mentions Herakleion as the seaport of Knossos during the Roman era ("And Cnossus has Heracleium as its seaport," Strabo, Geography X, 476–7; Spanákis, 1990, p. 12).

Based on recent archaeological excavation and research by the Ephorate of Antiquities of Herakleion, there is strong evidence

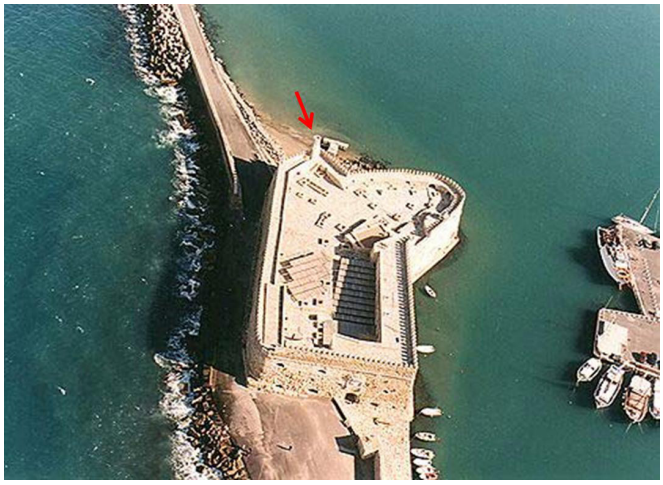

Figure 3: Top view of the Venetian Castle with red arrow pointing at the minaret (former lighthouse) on the upper roof and Northern edge of the building.

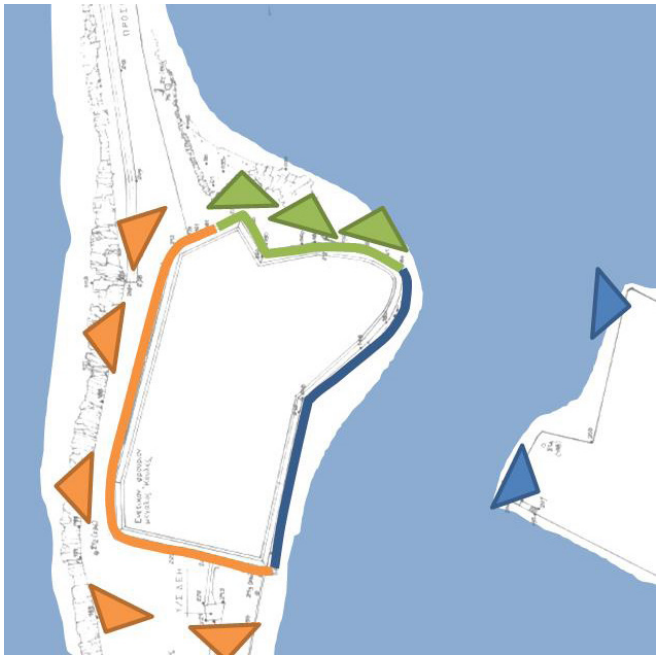

Figure 4: Plan view of the Castle with a representation of the phases (green, orange, blue in addition to the aerial view) of photogrammetric scanning.

to suggest that the port of Herakleion was already important and strongly fortified during the Hellenistic period (Sithiakáki et al., 2013; Muller, 2010). This fortification was rebuilt by the end of the Early Byzantine period (seventh or eighth centuries C.E.). During Arab rule (824–961 C.E.), the port had a significant role as a center from which goods and manpower were transported to the East. Its importance grew during the second Byzantine period, reaching a period of particular importance in Venetian times (16th to 17th centuries). Indeed, Venetians declared the port as one of the main naval stations serving their fleet in the eastern Mediterranean basin (and they adjusted the built structures to reflect this gained importance).

The *Rocca a Mare* probably succeeded a quadrilateral tower originally erected during the Hellenistic period, restored in Early Byzantine times and then remodeled (and named as *Castellum Communis*) in the first Venetian period (13th or 14th century). The Venetian "Castello" acquired its final form over the period of 1523–1540, in replacement of an older fortress destroyed by earthquakes. The fortress dominating the entrance to the Venetian harbor has been variously referred to as the *Castello del Molo*, the *Rocca a Mare* and the *Koules* (the Greek form of its Turkish name *Su kulesi* or sea fortress, which bears out the significance of the area in terms of defense). We know that Venetians used raw material from the small island of Dia and from Fraskia to rebuild and reinforce the continuous destructions of the fort caused by strong winter sea waves (Manolioúdis, 2013; Spanákis, 1990, p. 32; Xanthoudides, 1964, p. 44).

Under Ottoman rule (1669–1898), a number of mainly defensive alterations involved the upper floor of the building, including the addition of crenellations and cannon emplacements. Further, a small mosque was added with the building of a minaret that replaced a Venetian lighthouse in the northeastern corner of the superstructure (Fig. 3).

The force of the sea was such that walls and foundations of the port and the castle were in constant need of repair. Even today, major operations of reconstruction and structural consolidation are ongoing, under the supervision of the Ephorate of Antiquities of Herakleion. The current project, funded by the Operational Program "Competitiveness and Entrepreneurship" of the NSRF 2007–2013, and consisting in surface and sculpture conservation and masonry reinforcement, is in its conclusive phase.

Ground Photogrammetry Fieldwork

The *Koules* is a monumental, two-story tall building around 14 meters, with a total surface area of 3,600 square meters. It sits on an artificial peninsula slightly larger than the building (along the northwest-southeast axes) which stands between the open sea on the northwestern side and the calm water of the internal port on the southeastern part.

The main goal of the project was to complete 3D documentation of the exterior of the building, allowing a deeper understanding of its construction (on a stone-by-stone scale) and structural soundness. Time constraints and the architectural design of the sea-fortress required proper planning of the photogrammetric fieldwork in order to optimize the forthcoming image processing.

For this reason, the photogrammetric scanning was divided into four phases (Fig. 4), consisting of a series of camera stations (in order) along the northern, western, southern, and eastern part of the fortress (this part was photographed from the other side of the inner harbor entrance) and finally a top view with the use of a remotely piloted aerial system (RPAS).

The fortress could be photographed only from very close distances (orange and green stations on Fig. 4), apart from the eastern side, which could be photographed by the other side of the small port entrance. Short distance photographs are usually quite problematic, and this difficulty becomes even more evident during photogrammetric processing.

The entire fieldwork was organized in blocks, so that each one of them had around 50 to 70 measured targets (around 260 in total, with an inter-distance of about 1 to 3 meters). For accuracy purposes, each target was measured with the use of a theodolite. As tie-points between blocks, six to eight of the targets were kept in place and measured (when possible) from two theodolite stations; this method also allowed for a quick checking of the accuracy of the general alignment.

Only the southeastern side (blue line on Fig. 4) could not be surveyed with a total station, so its alignment with the rest of the building was achieved through photogrammetric image matching of overlapping areas and temporary (non-measured) reference points.

Once the targets had been attached to the wall surface, the theodolite was used to measure each of them in a relative coordinate system and orientation. Afterwards, specific measurements on the tarmac and wall surface (where possible) had been taken also with a DGPS so that the model could be properly oriented and geographically positioned.

The operation was repeated on each side of the building, with the exception of the southeastern side, the most inaccessible from the ground. The eastern side also served as a clear comparative example of the easiness of approach in a different context. Given the larger distance from the building and the ability to photograph it from few well-angled stations, it allowed a much more fluid and fast processing with less image processing and masking involved.

Further, in order to have a complete and "watertight" 3D model surface, the top of the building was photogrammetrically scanned both with photographs from the rooftop and with photographs from low altitude with a RPAS (drone).

A number of obstacles had to be overcome for the completion of the task, the most important of which are described below. Main challenges were:

- Sun light and time constraints
- Intense air traffic above the *Koules*
- Wind/waves issues
- Fences and narrow areas with limited field of view
- Scaffolding

Sun Light and Time Constraints

The position and shape of the fortress, in combination with the strict time frame during which the photographs could be captured, constitute some of the most problematic aspects of the photogrammetric documentation.

Indeed, the limited space around the *Koules* was disadvantageous for specific stations for photogrammetry since they could hardly avoid direct sunlight and consequent glares in photographs of the crenellation. This fact, besides altering the chromatic response of surfaces in the digital camera, also produced noise and false image matching in photogrammetric processing.

The southeastern side of the building was much easier to document in this sense given the ability to photograph from the other side of the small port entrance (in blue in Fig. 4) from a horizontal distance of about 60 to 80 meters.

Intense Air Traffic Above The *Koules*

For the requirements of the project, it was sufficient to fly between an altitude of 20 to 30 meters above sea level for a complete photogrammetric coverage, in respect of all civil aviation regulations, considering that the airport is 2 km away and the fort itself is used as reference point by pilots on take-off. Nevertheless, air traffic was not a secondary problem. Indeed because of the long tourist season on the island, many airplanes transit above the fortress during the day. No matter the altitude of airplanes, the areas around airports are generally restricted, especially during airplane transit/operations. Greece has no official regulations for RPAS so far; nevertheless, common sense precautions had to be taken into account. This made it hard to find a time gap when the drone could be safely used, especially when tourists were not around the fortress, in order to reduce risks such as bodily injuries.

Wind and Waves Issues

One of the reasons why this project is so vital is that strong waves from the northwest can easily damage the building's facade, contributing to the deterioration of wall surfaces and endangering the monument's life. In fact, the location of the fortress is one of the windiest spots on the island with strong winds that persist throughout the year. These strong winds also proved problematic to the documentation of the building during the ground fieldwork as well as causing difficulties with the stabilization of the drone in the air.

Fences and Narrow Places with Limited Field of View

Photogrammetric processing depends mostly on the camera, lens, and angle of view. Photographic cameras determine the file size and format, the quality of the image and the clarity of the result; together with the lens, camera construction determines the principal point (i.e., the optical or geometric center of the photograph) which is important for the photogrammetric processing. Generally, wide-angle non-zoom lens (called prime lens) are preferred in order to minimize image distortion during processing. An important aspect of photogrammetry deals with the angle of view. Homologous points and objects that appear only on photographs with very low angles (for example two photographs taken very close to each other) have much lower accuracy than objects on photos that are closer to 90 degrees apart.

The presence of semi-permanent enclosing fences (for the current and ongoing restoration) at close distance from wall surfaces (about 1.5 to 2 meters) considerably limited operability around the building, making it very hard to shoot detailed overlapping photographs with good angles and without obstacles. The frontal view of the facade was practically impossible to reach and consequently the orthographic view of that wall could only be interpolated from high-oblique perspectives (angles wider than 90 degrees), especially on the northwestern side.

The ideal solution in such a case would have been a more extensive use of low-oblique photographs from the unmanned vehicle, but this was not possible.

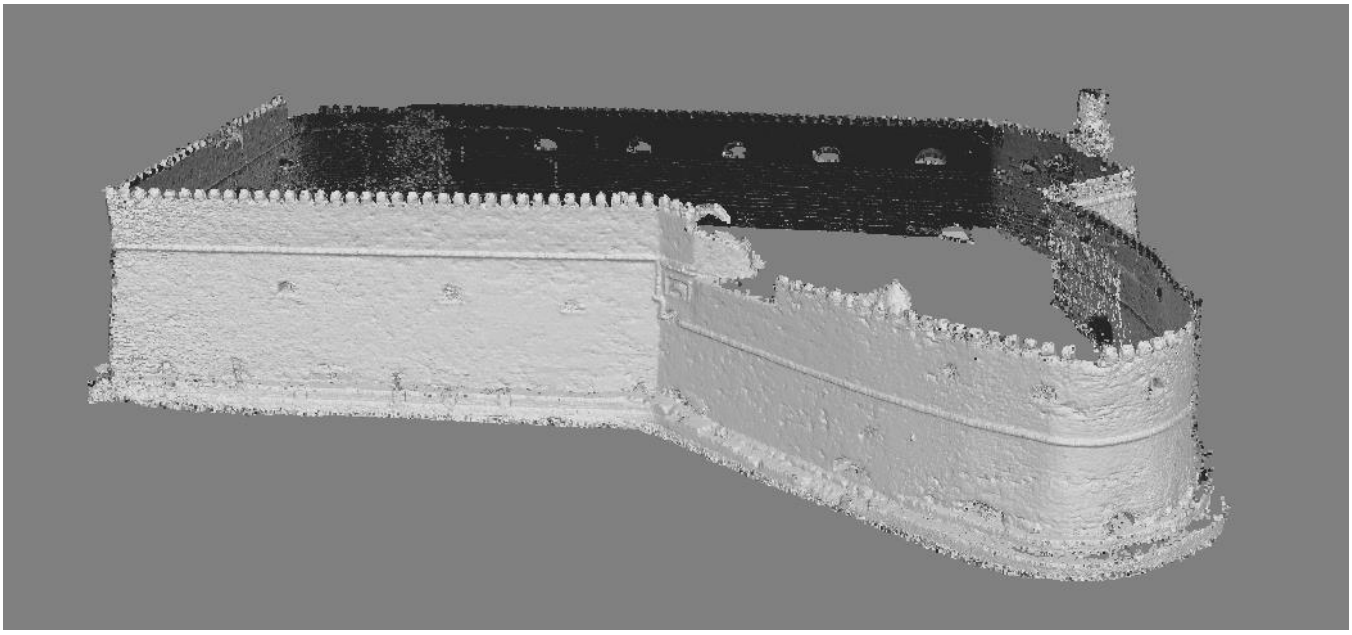

Figure 5: Perspective view of the dense point-cloud (70 million points) that constitute the sides of the building in the digital model.

Scaffolding

The restoration of the building facade was undertaken in steps, and each different day of photogrammetric fieldwork one area was covered by scaffolding for cleaning and another was just completed and exposed. The masking function of certain photogrammetric software allowed merging of data from different days, joining together partially covered areas with already cleaned and restored ones.

Results

The processing of about 3,500 photographs with 260 targets allowed the complete reconstruction of the Venetian fortress in 1:1 scale, properly oriented according to the Greek national coordinate system. The sides of the digital model (Fig. 5), comprised of 70 million points and 67 million faces (after surface cleaning), have been textured in a seamless view (with minor chromatic differences, normally limited to specific side).

The great advantage of the photogrammetric processing consists in the high scalability of the output. Indeed, once the photographs have been masked (if needed), aligned and oriented in space, the model is ready for further processing, so that, for example, specific areas of the building may be rendered with high level of details (dense cloud) or just as a simplified surface. For instance, one may want to undertake a deep study on the stone-block granulometry which would require a very high density of points; on the other hand, a lower resolution (and so a simplified model) for the building may be required for web dissemination or quick visualization. Both outputs can be achieved with the same preliminary alignment and orientation of cameras in any photogrammetric software package. For this reason, the above figure of points and faces is subject to change with the modification of parameters in accordance to the required final output.

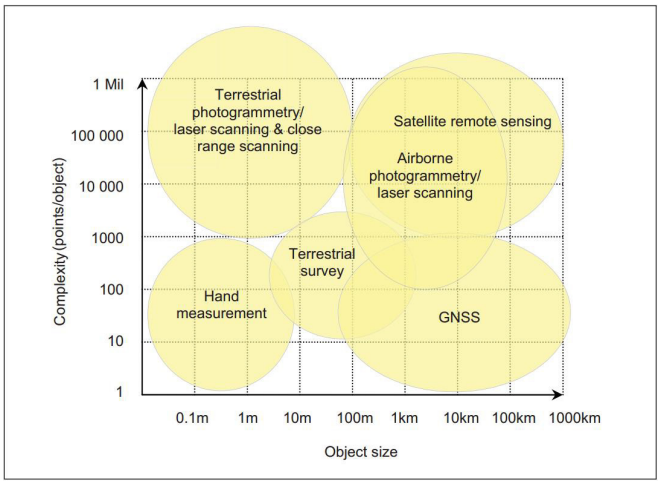

Figure 6: Three-dimensional survey techniques characterized by scale and object size (derived from Böhler presentation CIPA symposium 2001, Potsdam) (English Heritage, 2011, fig. 1).

Comparison with Other Methods

Architectural drawings of the fortress are of great value since they can be used for general measurements, volumes and perspective. Their rendering passes through symbolic levels made of codes and standards (Evans, 2000). The accurate measurement of surfaces on the contrary provides a clear and objective documentation of the state of preservation of the building allowing one to identify any structural issues or potential stability problems or assess the general condition of the site (Barber et al., 2006).

The only alternative method available for a structure of this type and size (Fig. 6) is with the use of laser scanners (Haddad, 2011). Terrestrial laser scanners (TLS) normally provide a predefined level of resolution that can be improved only by

moving closer to the subject of scanning; TLS normally produce non-uniform point cloud density with high point density related to proximity to the scanner itself. On the contrary, the possibility to generate more or less dense point-cloud anytime and at specific parts of an object, as photogrammetry can do, has no competition. Certainly, the photogrammetric output has limitations, which are normally related to the camera resolution. Nevertheless, recent developments in this area are demonstrating great margins of improvements even with low resolution or printed photographs.

Another important aspect in the comparison between laser scanning and photogrammetry is the logistics of fieldwork. It is normally necessary for laser scanning to set up more stations to interpolate the final point-cloud. Photogrammetry, on the other side, is based on actual photographs which can be compared to a certain extent to single stations of a TLS (although a single image without overlapping with the others cannot produce photogrammetric 3D points).

One of the main differences between the two systems is the time required for fieldwork and data processing. Normally, laser scanners require longer time in data acquiring but produce 1:1 scaled measurements (the latest models also produce georeferenced point-clouds); photogrammetry can be faster in image collection but takes longer time for point-cloud generation and scaling or geo-referencing.

Finally, photogrammetric software can nowadays work even with photographs taken for other purposes. The case of the monumental carved Buddha statues of Bamiyan serves as a good example. These sixth-century monuments in Afghanistan were destroyed by the Taliban in 2001. A digital model of them could be attempted with random tourists photographs collected from the web predating the statues' complete destruction (Gruen et al., 2003).

Digital Model as Research Tool

The existence of a digital 3D model of a building allows one to perform several tasks that would be difficult to conduct on site. One of them is the analysis of surfaces and the localization of potential structural issues on the building. The digital model allows rotating and visualizing the building's architecture from artificially created positions (i.e. not only from the ground-up, as most visitors experience the visit to the building).

With few inputs in specific software (such as CloudCompare or Meshlab), one can easily extract cross sections or projective views. Specific algorithms may also help highlighting specific issues, such as the artificial shadow casting over the untextured surface. Further, specific functions of point-cloud visualization and editing software may be used to manually draw features on the surface, similar to a 3D blackboard or virtual graffiti (Fig. 7). This system allows, for example, an immediate

Figure 7: Northeastern bastion of the Venetian fortress from the north. In red, structural issues from visual computer-aided analysis.

visualization of structural issues, and facilitates the mapping of their distribution on the exterior surface of the walls.

In the example of Fig. 7, the structural integrity of the building seems particularly threatened on the northeastern bastion, where cracks can be easily traced, highlighted and visualized over the 3D photogrammetric surface.

Another added value of photogrammetry for the preservation of cultural heritage lies in the possibility to integrate and process old photographs into a model generated from more recent photographs. Although the print resolution of published images from the early 20th century is not optimal for accurate processing, their use in archaeology can still provide important information. An example of such an application is the use of photographs from the early 1900s of the fortress into the photogrammetric model.

In 1900, the Italian architect, Giuseppe Gerola, was sent to Crete by the "Venice Art and Culture Scientific Institute" to study, photograph and record all Venetian monuments in Crete "before time passage consumed them." Part of those photographs have been published and some prints depict the *Koules* at that time (Gerola, 1905). By adding them to the photogrammetric processing, one can see for instance the exact location from which the photograph was taken. Indeed, with the use of common points between rendered 3D model and pixel on the specific (scanned) photographs, photogrammetric software can reconstruct the pose (camera orientation) and calibration (interior camera parameters), and thereafter the coordinates of the camera with respect to the model. By applying this calculation and by projecting the point of photo-shooting into a geo-referenced orthophoto for instance, one realizes that the photograph had been taken from one of the structures of the old port which is not present anymore. Additionally, the same old photographs can be overlaid with great accuracy on the new model to highlight differences in visual comparative analysis (Fig. 8).

Beside the archaeological and documentation value, the 3D model has great potential for the dissemination of cultural heritage buildings to the public (Haddad and Akasheh, 2005). A tablet application (Fig. 9) has been created at the GeoSat ReSeArch Lab for experimental purposes to identify possible ways of community involvement. The tablet app recognizes the given image of the fortress (in this case a Google-provided satellite image) and allows the user to visualize the 3D model from any possible perspective just by moving the tablet around. Images of the fortress could be easily printed and displayed on an information board close to the monument (or in other places of the city) with a link to download the application (for example via QRcode). Furthermore, the 3D model can be made more attractive with respect to public involvement, with reconstructed missing part (such as the Ottoman minaret in place of the 19th-century lighthouse) or animated with avatars of people with historical dresses moving around or on the roof of the monument.

Figure 8: Detail of the Koules after the photogrammetric processing with photographs from 2013–2014 (top) and 1900 by G. Gerola (Gerola, 1905)

Figure 9: Experimental tablet application (developed by L. Argyriou and N. Papadopoulos at the GeoSat ReSeArch Lab) for 3D model visualization and community involvement. Rotating the tablet around the object will provide different perspective of the fortress in an intuitive way.

Further Developments

Continuous monitoring of the fortress' walls will be beneficial as support for the localization of possible changes on the shape and the surface of the building during a long period of time. Taking advantage of the 3D model already available and presented here and the knowledge gained through this project, new versions of the *Koules* could be easily created to highlight and track any changes from previous 3D models of the fortress and help predict potential structural issues in the future.

Further, some approximate measures of the interior spaces of the building could be calculated to estimate volumes of stones or wall thickness so that the general stability and static assessment of the building can be evaluated with more accuracy. Obviously, precise scanning of the interior spaces would provide further valuable information. The 26 rooms

of the fortress could be perhaps scanned with fast and low-priced technological solutions such as modified Microsoft Kinect devices. Such devices, giving the possibility to scan and produce in real-time a 3D model in 1:1 scale with the principle of "structured light," are particularly suitable for interior spaces since the infrared laser they use is too weak to be captured with sun illuminated surfaces.

The combination of the 3D models of the exterior (already available) and interior of the building will also assist researchers in wall surface analysis and volumetric measures. From the reconstruction of the exact volume and shape of stone blocks of the building, one could try to discriminate the used quarry from a given set of quarries for the same material or try to reconstruct the infrastructure needed for the transportation of the building blocks.

Conclusions

The recent photogrammetric reconstruction of the exterior of the Venetian fortress in Herakleion (Crete, Greece), highlighted the successive repairs and additions carried out on the building throughout the centuries.

A number of issues have been encountered during the photogrammetric scanning of this monument and are presented here. Nevertheless, the case study demonstrated how photogrammetry may be an efficient and cost-effective way of documenting complex monuments. Most of the time required to complete the task is limited to the image-processing, and this can take place elsewhere, not necessarily in the field (especially beneficial in crowded tourist destinations). Also, different levels of detail can be extracted according to specific output or computer processing capabilities.

The affordability of such a proposed method and the possibility to reuse the obtained results in several projects makes the 3D model a particularly interesting educational tool. Surely, new problems are arising, such as the storage requirements, the dissemination of such large amount of data, and the publication of digital models. Nevertheless, the possibility to extend the documentation of historical and archaeological artifacts to three dimensions (moving forward from the traditional documentation done with 2D drawings) constitutes an important contribution to the understanding and preservation of cultural heritage.

Acknowledgements

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Conference Program

April 10, 2015

2:00–2:15 PM: Introduction by organizers

1st Session: Political and Ethical Issues in Cultural Heritage

2:15–2:45 PM: **Contested Antiquities, Contested Histories: The "City of David" as an Example**
Rannfrid Thelle, Wichita State University

2:45–3:15 PM: **Cultural Racketeering in Egypt: Tools of the 21st Century Archaeologist**
Katie A. Paul, The Antiquities Coalition

3:15–3:30 PM: Coffee Break

3:30–4:00 PM: **The Current State of Heritage in Iraq: Back from the Brink, or Over the Edge?**
Allison E. Cuneo, Boston University

4:00–4:30 PM: **Bridging the Divide: Cultural Heritage as Diplomat on Cyprus**
Leah Marangos, State University of New Jersey at Rutgers

4:30–5:00 PM: **Materiality of Post-War(s): The Impact of Conflict on the Archaeology and Landscape of Iraqi Kurdistan**
Kyra Kaercher, University of Pennsylvania Museum of Archaeology and Anthropology

5:00–5:30 PM: Break

Keynote Lecture

5:30–7:00 PM: **Go, Do Good! Responsibility and the Future of Cultural Heritage in the Eastern Mediterranean in the 21st Century**
Morag Kersel, DePaul University

7:00 PM: Reception at Jaffe Building

April 11, 2015

2nd Session: Negotiating the Past: Public Outreach

9:30–10:00 AM: **Engaging Communities and Negotiating Cultural Heritage Practices in Turkey, A Look at Urban Heritage and Rural Archaeological Case Studies**
Emily C. Arauz, Koç University

10:00–10:30 AM: **The Ur of the Chaldees Project: A Virtual Vision of Woolley's Excavations at Ur**
Simon Denham, The British Museum, *Sasha Renninger*, University of Pennsylvania Museum of Archaeology and Anthropology

10:30–10:45 AM: Coffee Break

10:45–11:15 AM: **The Reincarnation of the Damned Qajar Palace: from Palace to Prison, from Prison to Museum**
Zohreh Soltani, State University of New York at Binghamton

11:15–11:45 AM: **Community, Culture and Conflict in the Old City of Akko (Acre), Israel**
Emma Heidtman, University of Rhode Island

11:45 AM–12:30 PM: Lunch break

3rd Session: New Applications in Cultural Heritage Management and Conservation

12:30–1:00 PM: **Syria and Iraq Case Studies of Cultural Heritage in Conflict Using High-Resolution Satellite Imagery**
Katharyn Hanson, University of Pennsylvania Museum of Archaeology and Anthropology/ Penn Cultural Heritage Center

1:00–1:30 PM: **UAV's for site documentation and monitoring**
Austin Hill, University of Connecticut

1:30–2:00 PM: **Ancient Near Eastern Material Culture Studies and Reflectance Transformation Imaging (RTI)**
Ashley Fiutko Arico, Johns Hopkins University, *Nathaniel E. Greene*, University of Wisconsin-Madison, and *Heather Dana Davis Parker*, Johns Hopkins University

2:00–2:15 PM: Coffee Break

2:15–2:45 PM: **Out of the Illustrations: 3D Modelling for Architectural Analysis at Pseira**
Miriam G. Clinton, University of Pennsylvania

2:45–3:15 PM: **Visualizing Structural Issues Through Photogrammetric 3D Documentation of Cultural Heritage: The Venetian Castle at Heraklion, Crete**
Gianluca Cantoro, Institute for Mediterranean Studies (IMS-FORTH)

3:15–3:45 PM: Roundtable Discussion