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# Digital Humanities, Cultural Heritage and Social Justice: the case of a destroyed Armenian cemetery

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## Overview

The trail of destruction of cultural monuments in the Middle East in recent years has instigated or given renewed energy to concerns about threatened or destroyed cultural heritage and the use of technology in restoration and preservation. Beginning with work of Armin Grün and his colleagues on the Bamiyan Buddhas, crowd-sourcing of photographs and the use of photogrammetry to construct 3D representations has become an important method of enhancing existing archaeological data in preservation and reconstruction of cultural monuments that are at risk or have been destroyed. Current work of this kind includes - but is by no means limited to - the Rekrei initiative of Matthew Vincent and Chance Coughenour, and the Center for Cyber-Archaeology and Sustainability directed by Thomas Levy, based at University of California San Diego but established as a consortium also involving UCLA, UC Berkeley and UC Merced.

The case of the Armenian cemetery at Julfa, near the ancient city of Jugha, is somewhat unique, because in the century prior to its final destruction access was very restricted, so archaeological research was not possible, and there are rather few - and certainly no 'tourist' - photographs to draw on. At the beginning of last century, there were 10,000 tombstones in the

cemetery, including a very large number of ornately carved cross stones ('khachkars') that are unique to Armenian culture. The cemetery was completely destroyed by Azeri troops in 2005-2006, and the site converted into a military shooting range.

What we have as the basis for a reconstruction project are an archive of 2,000 photographs taken very systematically in the 1970s and 1980s by a remarkable Armenian scholar Argam Ayvanzyan, about 500 photographs taken on glass negatives in the early years of the 20th Century, and nearly 50 tombstones that were removed from the cemetery over the course of the century, providing us with valuable direct evidence.

In this session, the three papers will present the challenges faced in a project of this scale and complexity, the methods adopted to meet them and the lessons learned to date, and will consider wider concerns about the role and potential of digital scholarship in the preservation of endangered cultural heritage and in addressing and confronting social injustice and cultural genocide.

In the first paper, Harold Short will give a brief overview of the project and its context, and will then focus on the wider cultural and political issues, relating its concerns to those of the many other current projects engaged in the reconstruction of cultural heritage.

In the second, Judith Crispin will discuss the central role of images in the project, including the archive of photographs from the 20th century and the significant number of film and digital photographs shot by the project, and the complex inter-relationship between images of different kinds in the creation of a comprehensive archive on the one hand and an immersive 3D installation on the other.

In the third paper, Drew Baker will focus on the issues faced by this and similar projects in creating and documenting the 3D visualisations that are central to its long-term goals. This includes making it possible for individual monuments to be viewed as 'naturally' and in as much detail as possible, but also enabling shared group experiences - of the kind that would be possible in a 'real' cemetery.

## The Role of Digital Humanities in Countering Cultural Genocide: the virtual reconstruction of Julfa Cemetery

*Harold Short*

The roots of Armenian culture can be traced to the establishment of Nakhichevan during the Fourth Century BC in what is now the Nakhchivan

Autonomous Republic, an exclave of Azerbaijan. Nakhichevan's name derives from the Armenian "Nakhnakan Ichevan" (landing place), referring to the place Noah landed his Ark after the biblical deluge. It was in Nakhichevan that Mesrob Mashtots first created the Armenian Alphabet and opened early Armenian schools. The centre of Nakhichevan's culture was the ancient city of Julfa (or Jugha), destroyed by order of Shah Abbas in 1605 during one of the periodic wars between Persia and Turkey. The Shah's scorched earth policy did not require the destruction of the cemetery, so it survived.

Until 2005, Julfa cemetery graced the banks of the river Arax with 10,000 tombstones and other funerary monuments, including over 2,000 ornate Armenian khachkars (cross-stones) from the 15th and 16th century, inscribed with Christian crosses, suns, flowers and climbing plants. Alongside Julfa's khachkars stood heavily inscribed ram-shaped stones, unique to this cemetery, and ordinary tombstones. Spread over three hills on Nakhichevan's border with Iran, Julfa cemetery was home to the largest (and probably the earliest) collection of Eastern Christian cultural monuments in existence.

In 2005 Azerbaijani authorities demolished Julfa cemetery's priceless khachkars with bulldozers, loaded the crushed fragments onto trucks and emptied them into the river Arax. Shortly thereafter, Nakhichevan authorities constructed a military shooting range on the very ground where thousands of human remains lie, now unmarked.

In 2013 a small research team was established, seeking to ascertain whether sufficient primary sources still existed to make possible a large scale digital recreation of Julfa cemetery. The results were published in the ebook "Recovering a Lost Armenian Cemetery", which can be downloaded from the project webpage at (<https://julfaproject.wordpress.com/>). Based on this work, the Julfa Cemetery Digital Repatriation Project was launched in 2015. It aims to return to the Armenian people the entire medieval section of Julfa's cemetery, consisting of 2,000 khachkars and ram-shaped stones. These destroyed monuments are now designated by UNESCO as 'intangible world heritage'.

In further field work in 2015 and 2016, in Armenia, Iran and Georgia, the project team took over 50,000 high resolution digital photographs and 3D scans of the extant tombstones – i.e. those removed from the cemetery during the 20th Century. These were used to create an initial immersive 3D exhibition, which was shown for the first time in Rome in September 2016.

Further shows are planned in Australia and North America by the time of the DH2017 conference, with additional khachkars added as the work on the photographic archive proceeds.

The Julfa Cemetery Digital Repatriation Project is hosted by Australian Catholic University at its North Sydney campus, and is a project of the Institute for Religion and Critical Inquiry. The purpose of the project is to create a virtual reconstruction of the cemetery, with the aims of ensuring the public memory of Armenia's cultural heritage, not only for the benefit of Armenians but also as an important contribution to world cultural heritage. The project will also restore a measure of dignity to the 10,000 deceased inhabitants, whose graves now lie unmarked beneath a shooting range. The project will also safeguard an important testimony to early Christian history in the Near East, and to Armenian-Persian and Christian-Islamic relations over a period of centuries.

The project's primary goals are six-fold:

- to create an extensive archive of materials related to the cemetery and its monuments—photographs, documents and digital materials, to be housed at Australian Catholic University and the State Library of New South Wales in Sydney;
- to carry out research and create a basis for ongoing research, not only in Armenian history, religion and culture, but in the history and culture of the wider region, including Persia/Iran;
- to create permanent virtual reality installations in Yerevan and Sydney (and any other city that wishes to have one);
- to create a touring exhibition that can travel to cities without the resources to establish a permanent installation;
- to create a vivid web presence, including online virtual reality exhibits, open to comment and contribution to everyone who may be interested;
- to work in collaboration with other projects and individuals interested in the preservation and reconstruction of destroyed and endangered cultural heritage.

The main source materials are over 2,500 original photographs of the site dating from 1915 until the present, illustrated manuscripts, handwritten journals, architectural sketches and audio recordings. The installations and other outputs will be derived

from the repository of research materials gathered and created by the project—archaeological, historical, cultural, theological.

One distinguishing feature of the project is that in addition to ambitious 3D visualisations and realisations, research is being carried out on the carvings and inscriptions. The symbolism of the carvings is important in Armenian theology and cultural history. In addition, each khachkar was created for an individual (or occasionally an event), and the project is researching the inscriptions in order to identify as many as possible of the individuals (and events) they commemorate.

The reconstruction of the cemetery is of particular importance to Armenians, who see its destruction as part of a pattern of cultural genocide in the Near East, and the project has received considerable support from Armenians not only in the country but in the many diaspora communities around the world, including Sydney. There is much wider significance, however. The cemetery was on the border between Armenia and Persia, and the photographic record demonstrates considerable Persian / Muslim influences in the design and carving of the stones. The history of the cemetery is important, therefore, as Iranian as well as Armenian history. In addition there is the wider consideration that all cultural heritage is world heritage.

(Note: a key reason for the project being based at the Australian Catholic University in Sydney, Australia is that the Armenian diaspora in that city numbers 45,000, with many of the families living there able to trace their ancestry back to the Armenians forced by Shah Abbas to leave the ancient city of Julfa prior to its destruction, and to travel with his army to the city of New Julfa, which he constructed near his capital, Isfahan.)

One of the key challenges the project is facing is to do with the 'politics' of cultural memory. Whose interpretation of Armenian - or Iranian - cultural history should be represented? How can differing perspectives on the symbolism of the carvings be reflected? Engagement with a global 'audience' is a key commitment of the project, but how can such engagement be managed in a practical manner that respects the viewpoints and 'rights' of all who wish to contribute?

The political dimensions of repatriating conflict-destroyed sites and the 'human rights' aspects of the project are among some broader questions around the role of digital humanities scholarship in addressing cultural genocide and social injustice. How explicit

should such motivations be, especially given that questions of cultural genocide are always contested?

Related to these questions, the paper will also consider how the Julfa Cemetery project stands in the landscape of the many other projects now at work on the reconstruction of threatened or destroyed cultural heritage, and the opportunities for collaboration, not only in relation to technical methods, but perhaps even more importantly in relation to the social, political and regional issues that are common to them all.

### Image-memory and Julfa Cemetery Digital Repatriation Project.

*Judith Crispin*

From its very inception the work of the Julfa Cemetery Digital Repatriation Project has been centred around the image. The once great cemetery that graced the banks of the river Arax exists now only in memory, anecdote and across a slim collection of photographic records.

In 1648, when French missionary and lexicographer Alexandre de Rhodes visited Julfa cemetery, he reported seeing at least 10,000 khachkars (Armenian cross-stones) in good condition at the site. By the early 20th century this number had declined to only 6000 monuments, including the cemetery's ram-shaped stones. The construction of a railway through Julfa cemetery by Soviet forces in the early 20th century saw the destruction of many monuments, some being repurposed as construction materials. In the 1970s the cemetery was repeatedly visited, over a number of years, by the Armenian researcher Argam Ayvazyan. He meticulously recorded the number of existing khachkars at that time to be 462, spread over the first hill, 1,672 across the second, and 573 on the third. Over 1,000 ram-shaped stones and tombstones stood at the site and more than 1,400 additional monuments, khachkars and ram-shaped stones still existed but in fragments.

In 1998, Azeri soldiers toppled and removed 800 khachkars from the cemetery and began destroying others with bulldozers. This process, temporarily blocked by protests from UNESCO, was resumed in November 2002 when all the remaining khachkars were toppled. Between 10 and 14 December 2005, the distressed Armenian Bishop of Tabriz video-recorded 100 soldiers pulverising Julfa's khachkars with heavy hammers and pick axes. Broken fragments were shovelled on to lorries and dumped in the river Arax.

In 2006 an international parliamentary delegation representing Switzerland, France, Greece, Canada, the

United Kingdom, Belgium and Scotland urged UNESCO to condemn, in no uncertain terms, the destruction of cultural sites at Julfa, including its cemetery.

Fortunately, during the course of last century, a number of monuments were removed from Julfa cemetery for a variety of reasons, including over 25 khachkars and a similar number of ram-shaped stones and ordinary tombstones. These are invaluable in providing the only remaining direct evidence of the monuments of Julfa cemetery.

Three field trips were undertaken by the project, in 2013, 2015 and 2016, to identify and gather as much primary material as possible, and to take a large number of additional photographs – film and digital – of extant monuments and locations. (The trips were financially supported by the Australian Catholic University, Gulbenkian Foundation, and organisations and individuals from the Armenian diaspora in Australia.)

Khachkars are unique to Armenian culture, and most are ornately and intricately carved. Each was carved to commemorate a particular individual (or occasionally an event) and no two khachkars are the same. For the most part the carvings employ common iconographic symbols, and many contain inscriptions. The details of the carvings are therefore extremely important in understanding any given khachkar, and this is one of the many challenges facing the project – faithful restoration of each individual monument, with all the detailed intricacy of its carving, and at the same time placing each in correct relationship to its neighbours, and within a reconstructed environment that is as faithful as possible to the original cemetery both visually and aurally (by means of 3D sound recordings).

Using the materials gathered on the field trips the project has piloted a number of new methods to try to reconstruct the total cemetery scene. Despite the Julfa cemetery site being under military control since the early 1900s, and part of an active conflict zone at present, we have nevertheless found ways to obtain high-resolution photographs of the entire region. As a result of our fieldwork, we have now accumulated an extensive archive of materials from which to generate VR (virtual reality) representations of the medieval Armenian cemetery at Julfa. These materials include photographs and 3D scans of extant khachkars, ram-shaped stones, tombstones and other monuments; historical photographs (and negatives) taken of Julfa cemetery prior to its destruction in 2006; architectural drawings of extant stones; maps; satellite images; audio field recordings; video field

recordings; books & manuscripts. We have also sought to engage the Armenian community, both within Armenia and also in the diaspora, at every stage.

An over-riding goal of the project is to create secondary models that convey some of the beauty and gravitas of this important site, and its remarkable monuments. But a great deal of image work must be undertaken before any new models can emerge. Old photographic negatives and positives must be restored, preserved, catalogued and documented. New high-resolution images must be created of all surviving artifacts and brought into the service of model-creating practice. Both film and digital photographs have been shot, some to fulfil an archive purpose, and others to support the detailed and complex photogrammetry techniques needed to convert 2D images into 3D models. Experience has shown that even with 3D scans, there is still a need for these to be supplemented by photogrammetry using the archival photographs in an intricate iterative process if an acceptable 3D model is to be created.

The collection, curation and secondary manipulation of images open a number of serious questions about best practice including issues of data transparency and the degradation of the digital image. This session will trace the evolution of old and new images from their origins in film or file to their final destination as components in a large scale digital realization of Julfa's lost cemetery. It will examine the balance of scholarship and creative practice that has emerged from our efforts to date. We will discuss the relationship of our project with other cultural stakeholders including museums, galleries and trusts as well as the channels of communication we have established with the Armenian people and their representatives.

In the spirit of collegiality, we will examine the aspects of image curation and manipulation that have failed as well as those that have succeeded. We will also discuss some of the political and social pitfalls that await the unwary researcher. Over the past decade so many important world sites have been lost to conflict and it is the aim of this project to facilitate other projects that seek to digitally return these treasures to the international community. The humanities, as range of academic disciplines and practice, have a very great challenge to answer in the form of decimated cultural monuments and the large-scale destruction of primary historical records. This challenge is also an opportunity for the humanities to occupy a more vital and relevant role in global scholarship than it has in previous times.

## Modelling a Cemetery – and not just its monuments

*Drew Baker*

The work undertaken through the Julfa Cemetery Digital Repatriation Project presents a wide range of challenges at all levels from data acquisition, digitalisation, documentation and visualisation. The latter of these, irrespective of any project that includes computer-based visualisation of cultural heritage, is by its nature complex, seeking – as it must – an appropriate balance between meaningful scholarly representation and a simulated environment that extends our understanding beyond a simple digital ekphrasis.

While aspects of the creation of content undertaken as part of the project will be familiar to those working in the field of virtual archaeology the Julfa Project has a unique set of constraints that impact on the acquisition of data, traditional recording processes and output/dissemination approaches. The sensitivities surrounding the Julfa cemetery site and its more recent history are manifold; political, cultural, theological, socio-religious and, critically, on going, while the absence of hard archaeological remains and restrictions on recording both extant monuments and context further complicate established approaches even to contested archaeology and cultural history.

If the cemetery is to be fully understood – and experienced – it has to be seen as more than the sum of its monuments. The character of the cemetery as a whole depended not only on its monuments, but on its topography, its natural and built environment - including the nearby river Arax, and the plant, insect and bird life - and the people who lived around it and who worked in and near it, the families who once came to visit the graves of their relatives, the priests who officiated at burials and other rituals there.

So the wider context of the cemetery, that is to say the surrounding landscape of the Arax River valley, is integral to understanding the location of Julfa cemetery and the placement of the monuments it contained. The river, however, forms a sensitive border between Iran, Armenia and the Nakhchivan Autonomous Republic exclave of Azerbaijan where the cemetery site is located. The comprehensive destruction of the cemetery and its monuments to make way for a military installation further compounds issues of context, with the finer topographical details of the immediate cemetery area at best inaccessible and at worst destroyed or covered in concrete.

The dichotomy here is one of granularity. The wider landscape context is instantly recognisable but the detail in which to place the monuments within is lacking, and both are necessary if the placement of the reconstructed monuments is to be faithful to the evidence within the archive. Satellite imagery, maps and photographic imagery from both the archive and fieldwork have had to be bought together and harmonized in order to provide a level of detail that is both recognizable as the Julfa region but also practical in terms of providing a virtual space to place monuments that is workable within the technological constraints.

Similar challenges are presented with the monuments themselves. Out of the some two thousand khachkars the work undertaken in the preliminary stages of the project has focused on around thirty that were removed before 2005. Because the existence of these artefacts represents fundamental evidence in the disputed history of the cemetery the monuments removed from the medieval cemetery at Julfa are themselves considered ‘at risk’ and fieldwork has had to be conducted with a degree of discretion that prohibits certain methods of data acquisition. Indeed even where official permission was required and granted operations in the field attracted unwanted attention from passers-by that went beyond the familiar casual interest that field work naturally attracts ranging from concern to non-physical confrontation.

Each document from the extant monument recording process has required combining, cleaning and in some instances repairing in order to create a faithful digital representation of the target monument. Further these have had to be considered in the context of placement within the virtual world and strategies and techniques have been implemented to deal with multimillion polygon scans so as not to prejudice the performance specification of the interactive deliverables. Equally where the monuments are no longer extant, or in a few cases where data acquisition has been impossible, but are present in the archival record these have been recreated based on primary resources and then harmonised with other digital assets to provide a comprehensive spatial environment in which the cemetery can be explored and understood.

Within the created digital world of the Julfa project each significant element, landscape, monument, building, therefore has a pedigree of metadata and paradata that can be assessed and verified. This audit trail not only allows the scholar to drill down into the

project archive to access specific information about a particular monument and its interrelations – in effect creating a visual and spatial index to the corpus – but is essential if the visual outcomes of the project are to be both a faithful and accurate representation of the evidence and robust enough to withstand scrutiny and the inevitable criticism that a project of this nature will attract.

While the applications of computer graphics to cultural history has a strong pedigree within the Digital Humanities, rapidly changing hardware, software and methods have led to a constantly changing landscape of possibilities for visualisation as a research tool. Conversely this potential has also created a gulf of expectation between the scholar, developer and consumer that increasingly requires a much broader and diverse skill set traditionally associated with a visual digital outcome. The design of the production workflow has therefore incorporated and engaged with techniques and practices from theatre, photography, film making, video game production, acoustic engineering, audio visual design to achieve a synthesis of best practice across a wide spectrum of interdisciplinary approaches.

Moreover the increased visual literacy through exposure to mainstream media on the part of the end consumer has led to a presumption that any output derived from scholarly research but expressed through computer graphics will have the same character as mass media outputs experienced at the cinema, television and video game console. Understanding the tension between these expectation and presumptions at all stages of the development cycle is now more crucial than ever if projects of this nature are to succeed. New modes of engagement must be developed, revived or co-opted from other disciplines and added to the collection of tools available to the project allowing different modes of engagement.

These considerations have informed the shape of the dissemination media formats that have been developed. Recognition of the cemetery as a place that is greater than the sum of its monuments has led to a primary focus on creating a communal immersive experience, so as to allow emotional engagement with the ‘whole’ lost cultural heritage of Julfa cemetery. At the same time, the importance of the monuments themselves must not be forgotten, so a second focus has been on displays that allow individual monuments to be viewed and interrogated at close quarters, and at full size.

The session will consider the challenges presented in both the creation and dissemination strategies available to a multi-faceted project with diverse stakeholders as manifested in our project. This will include a review of current best practice within cultural heritage visualisation and ‘lessons learnt’ from the project’s colloquium and demonstrations in Rome in September 2016, and in subsequent demonstrations.

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